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Final Closure Report Addendum
Columbus Drive Sidewalk Remediation
North Columbus Drive RV3 Site
200 East Illinois Street
Chicago, Illinois

U. S. Environmental Protection Agency
Region 5
77 W. Jackson Boulevard, SE-5J
Chicago, Illinois

STS Project No. 1-24418-YM
July 28, 2004
Revised August 31, 2004

STS CONSULTANTS
750 Corporate Woods Parkway
Vernon Hills, Illinois 60061
847-279-2500 Phone
847-279-2510 Fax

August 31, 2004

Ms. Verneta Simon, On-Scene Coordinator
U. S. Environmental Protection Agency, Region 5
77 W. Jackson Boulevard, SE-5J
Chicago, Illinois 60604

via Federal Express

RE: Revised Final Closure Report Addendum for Columbus Drive Sidewalk Remediation, North Columbus Drive RV3 Site, 200 East Illinois Street, Chicago, Illinois - STS Project No. 1-24418-YM

Dear Ms. Simon:

Attached please find five copies of revised Final Closure Report Addendum (Addendum) for the removal of impacted soil beneath the North Columbus Drive sidewalk. The Addendum has been revised to include the USEPA comments dated August 12, 2004. The work was completed in accordance with the Work Plan approved by USEPA on April 11, 2001 and to the limits described in the USEPA Completion letter of August 26, 2002. As reflected in the Addendum, all off-site work required of Grand Pier Center, LLC by the Amended Unilateral Administrative Order (UAO) at Grand Pier is complete, and no further removal activities are necessary.

As a result, STS Consultants (STS), Project Coordinator for this removal action, on behalf of Grand Pier Center, LLC, requests approval by the USEPA of the Addendum, and the issuance by USEPA of a closure completion letter in accordance with the UAO Docket number V-W-96-C-353.

Please contact us with any questions or comments you may have regarding this Addendum.

Regards,

STS CONSULTANTS, LTD.

Steven C. Kornder, Ph.D.
Senior Project Geochemist

Craig S. Rawlinson For
Douglas J. Hermann
Principal

cc: James Brandt, CM&D
Kris Curran, Ungaretti & Harris LLP
Mike Witte, Grand Pier Center
Rick Mueller, Johnson & Bell
Mark Krippel, Kerr-McGee, West Chicago

Attachment: Addendum

AFFIDAVIT

Under penalty of law, I certify that, to the best of my knowledge, after appropriate inquiries of all relevant persons involved in the preparation of this report, the information submitted is true, accurate, and complete.

Steven C. Kornder, Ph.D.
Senior Project Geochemist

August 31, 2004
Date

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FIGURES

APPENDICES

U. S. Environmental Protection Agency
STS Project No. 1-24418-YM
July 28, 2004
Revised August 31, 2004

ADDENDUM TO THE FINAL CLOSURE REPORT
GRAND PIER CENTER
NORTH COLUMBUS DRIVE SITE RV3
200 EAST ILLINOIS STREET
CHICAGO, ILLINOIS

1.0 INTRODUCTION

This Addendum Report was prepared by STS Consultants, Ltd. (STS) on behalf of Grand Pier Center, LLC. Radiologically-impacted soil was identified on the subject site by USEPA on February 29, 2000, and was subsequently removed under Unilateral Administrative Order (UAO) Docket Number V-W-96-C-353 issued June 6, 1996 and the First Amendment to that Order dated March 29, 2000, in accordance with a Work Plan dated March 20, 2000 and approved by USEPA March 23, 2000. The removal of the on-site portion of the identified compacted material was completed as documented in the Final Closure Report[1] prepared by STS, dated July 2, 2001 and the Completion letter from USEPA dated August 26, 2002.

Residual contamination remained off-site beneath the adjacent sidewalk to the east along North Columbus Drive. This report describes the work conducted between May 17 and May 28, 2004, in accordance with the Work Plan for the Columbus Drive Sidewalk Remediation dated March 9, 2001 (Appendix A) and approved by U. S. Environmental Protection Agency (USEPA) on April 11, 2001 (Appendix B). The objective of this report is to document the removal of the radiologically-impacted soil beneath the western sidewalk in the right-of–way of North Columbus Drive between East Illinois and East Grand to the USEPA cleanup levels (5 picoCuries per gram (pCi/g) total radium above background or 7.1 pCi/g).

1.1 Identification of Facility

The subject site is referred to by USEPA as the Lindsay Light II/North Columbus Drive RV3 site. The property, with a street address of 200 East Illinois Street, Chicago, Illinois, occupies the majority of the block bounded by East Grand Avenue on the north, East Illinois Street on the south, North Columbus Drive on the east, and St. Clair Street on the west. A portion of the northwest corner of this block is

[1] STS (July 2, 2001) Grand Pier Center LLC - Final Closure Report, Lindsay Light II/North Columbus Drive RV3 Site, 200 East Illinois Street, Chicago, Illinois.

excluded from the site. This report covers only the sidewalk right-of-way along the eastern, North Columbus Drive, side of the site.

1.2 Project Background

Construction of the Grand Pier Center involved removal of radiologically-impacted soils present on the site. The removal activities involving the on-site portion of the remediation effort were summarized in a Closure Report submitted to the USEPA on July 2, 2001. In the course of that construction and removal effort, radiologically-impacted soil was identified at several locations beneath the sidewalks surrounding the subject site. In most cases, the detected radiologically-impacted materials were removed by extending the excavations a small distance into the right-of-way, or the concentrations that remained were relatively low, close to the remediation criteria. Those areas are shown on Figure 2.4 in the July 2, 2001 Closure Report. However, along the eastern side of the site beneath the North Columbus Drive sidewalk, the concentrations were sufficiently above the clean-up criteria that the USEPA requested in the project completion letter (USEPA, August 26, 2002 – refer to Appendix B) that the soil be remediated beneath the width of the sidewalk (i.e., be removed to the curb line).

2.0 REMOVAL ACTION

2.1 Sidewalk Area Excavation Background

Previous removal actions on the Grand Pier Center site included the excavation and disposal of radiologically-impacted soil identified during radiological surveys conducted as part of excavation activities for the Grand Pier Center development construction, specifically the basement excavations and installation of foundation elements. Along the North Columbus Drive side of the site, a trench was excavated for the construction of foundation grade beams. Along a portion of that trench, radiologically-impacted soil was encountered that extended beneath the North Columbus Drive sidewalk right-of-way. An initial effort was made to excavate the radiologically-impacted soil under the sidewalk and in the right-of-way. However, radiologically-impacted soil remained in the excavations eastern wall.

Surveys of the excavation wall suggested that the soil immediately beneath the sidewalk to a depth of approximately 3 feet appeared to be below the clean-up criteria. The highest concentrations appeared to lie in a zone from perhaps 3 to 6 feet deep, and along a width of perhaps 15 feet on the eastern wall of the excavation, which parallels North Columbus Drive. Additionally, lower concentrations of impacted soil appeared to extend to the natural soil at approximately 8 feet deep. As a result of the levels of radiation that remained, about 50 feet of plywood sheeting and plastic membrane were used to isolate the impacted soil from the interior of the site. In addition, three steel plates, covering approximately 12 feet horizontally, were placed against the plywood and plastic sheeting to provide additional shielding for construction workers. The steel plates were placed over the area of the highest gamma readings measured during surveying the wall. Those steel plates, the plywood sheeting and plastic membrane were left in place as a marker when the trench excavation was backfilled following construction of the grade beam at that location.

2.2 Sidewalk Area Removal Actions

2.2.1 Pre-Excavation Activities

The pre-excavation activities began on May 17, 2004 and consisted of the following.

- Closure of the sidewalk on the west side of Columbus Drive;
- Closure of the westernmost lane (curb lane) of south-bound Columbus Drive;
- Placement of traffic "jersey barriers";

- Removal and radiological screening of concrete curb and sidewalk (survey results are included in Appendix G);
- Ground surface gamma survey and designation and roping-off of an exclusion zone on the basis of the elevated gamma readings.

2.2.2 Radiologically Impacted Soil Removal Actions

On Tuesday, May 18, 2004, the excavation of the radiologically-impacted soils was initiated. Impacted soil was loaded directed into lined shipping containers ("Baker Boxes"). Two containers were loaded May 18; two containers were loaded May 20; two containers were loaded May 21; and one container was loaded May 24. The radiologically impacted material extended to a depth of between 7.5 and 8 feet at which depth native soil was encountered. The dimensions of the final remediated area are approximately 10 by 46 feet as shown on Figure 1.

2.2.3 Pre-Verification and Verification Sampling

Following removal of radiologically-impacted material, STS collected pre-verification samples from that area. If analysis of those samples showed that the cleanup level had been achieved, the USEPA was notified and mobilized to the site to conduct their verification survey of that area. The results of the pre-verification survey sample analyses are included in Appendix D.

An initial verification sample, designated Area A, was collected on Friday May 21, 2004. On Monday May 24, 2004, the USEPA On-Scene Coordinator and STS concurred that Area A should be resampled because the heavy rains over the weekend may have potentially re-contaminated the area via runoff from adjacent areas that were still radiologically-impacted. Because of the decision to resample the area, custody of the Area A sample was not relinquished to the USEPA.

Following the completion of the excavation activities of Monday May 24, the entire exclusion zone area was subdivided into three sections for verification sampling. The final sample areas, designated Areas B, C and D, are shown on the Figure 1 and the site map in Appendix C. The northern boundary of Area C was identical to that of the area initially designated as Area A, while the southern boundary of Area C was located about 3 feet south of that of Area A. Therefore, Area A was completely contained within Area C and subsequently resampled as Area C.

The USEPA verification samples were collected and analyzed for Areas B and C on May 24, 2004, and for Area D on May 25, 2004, and USEPA sign-off was obtained for the areas on those dates. The results of the NUTRANL analysis of the USEPA verification samples are included along with the signed notifications of successful verifications forms in Appendix C.

2.2.4 Post-Excavation Activities

Backfilling of the excavation with gravel, and compaction in preparation for replacement of the sidewalk was completed May 26, 2004. Plywood sheeting was left in-place below the ground surface along the eastern boundary of the exclusion zone to delineate between clean and contaminated areas. This boundary is approximately identical to the curb line of North Columbus Drive. Concrete for the curb and sidewalk was poured May 27, 2004, and on May 28, 2004, the sidewalk barriers were removed and all sidewalk work completed.

2.3 Difficulties Encountered

2.3.1 Electric Utility Duct

An electrical utility duct was present in the area to be excavated. The duct was supposedly abandoned according to the results of the Chicago Department of Transportation's Office of Underground Coordination (OUC) review process. However, an energized street light controller was present in the duct, which required rerouting. This rerouting resulted in no excavation being conducted on May 19, 2004.

2.3.2 Steel Plates Removal

The three steel plates that had been left in the ground when the area was back filled were discovered to have been removed when the excavation extended to that area. It is not known when the plates were removed or by whom. The steel plates were likely separated from the radiologically-impacted soil by the plywood sheeting and plastic membrane which were still present when the area was excavated.

3.0 MATERIAL REMAINING BENEATH NORTH COLUMBUS DRIVE

In accordance with the USEPA work plan approval letter of August 26, 2002 (Appendix B), the objective of the project was to remove radiologically-impacted material beneath the sidewalk right-a-way and not to expand the excavation east beneath North Columbus Drive. Field surveying of the eastern boundary (excavation wall along the curb line) exhibited elevated gamma readings between 1.5 and 8 feet below ground surface (bgs). A soil sample was collected in the area exhibiting the highest observed gamma readings (i.e., 50,000 counts per minute (cpm)) to document the concentration of impacted material remaining in the excavation wall along the curb line (i.e., the eastern excavation boundary). This sample was collected at approximately the center of Area C (refer to Figure 1). Elevated gamma readings were observed along the eastern excavation boundary for approximately 10 feet north and south of the sample. The discrete sample was collected from approximately 3 feet bgs. The sample exhibited a total radium level of 148.53 pCi/g (refer to NUTRANL results in Appendix D – sample ID #933).

4.0 QUANTITIES OF THORIUM-IMPACTED SOIL REMOVED

A total of seven containers containing approximately 100 cubic yards of radiologically-impacted soil were removed from the North Columbus Drive sidewalk right-of-way area during the project. Three samples of the radiologically-impacted soil were collected (i.e., one sample per exclusion zone area) to characterize the total radium levels. The impacted soil results ranged from 85.07 to 463.68 pCi/g total radium (refer to NUTRANL results in Appendix D – sample ID #s 928 – 930). Radiological surveys of the exterior of the shipping containers prior to shipment indicated only one of the seven containers required placarding (refer to Appendix I - manifest number 659-02-0454). The containers were shipped to EnviroCare of Utah for disposal. Copies of the manifests for the seven containers of radiologically-impacted soil are provided in Appendix H.

5.0 ANALYTICAL RESULTS

5.1 Soil Sample Radiological Analytical Results

Soil samples collected during the remediation process were analyzed by Stan A. Huber, Inc. (Huber) at an off-site laboratory by NUTRANL analysis to document the concentrations of the target cleanup radionuclides in the material being excavated. Samples ranged from materials below cleanup levels to materials above the cleanup threshold. The NUTRANL analyses for the samples are presented in Appendix D by laboratory number, which is also equivalent to chronological order.

5.1.1 Pre-Verification Samples

The process of verification of remediation of the exclusion zone involved the collection and analysis of pre-verification samples to confirm the removal had achieved the required cleanup levels. The impacted area (exclusion zone) was divided into sections as the area was remediated via the removal of the impacted soil. The exclusion zone was surveyed in areas not exceeding 100 square meters. The pre-EPA survey and sampling areas (i.e., pre-verification sample areas) were selected by the Field Team Leader (STS) and the Health Physics subcontractor (Huber). The USEPA was notified if the results of the pre-verification samples indicated the area met the cleanup standard. Thereafter, the USEPA mobilized to the site and conducted verification survey of each respective area. The results of the pre-verification samples are included in Appendix D.

5.1.2 USEPA Verification Samples

The USEPA verification areas were the same as the pre-EPA survey and sampling areas (i.e., pre-verification sample areas). USEPA conducted verification surveys and collected verification samples for three areas in the exclusion zone (i.e., Areas B, C and D. Area A was included in Area C). Each area was surveyed by USEPA, and five sub-samples were collected from the approximate four quarters and the center of the area to create a composite for that area. The five samples forming the composite were then homogenized and five sub-samples were prepared. If the average of these five sub-samples was found to be less than the cleanup threshold of 7.1 pCi/g total radium, a successful verification form was prepared for USEPA signature. The supporting data and form were faxed to USEPA. Upon receipt of the signed form, the area was released for backfilling.

The NUTRANL results of the USEPA verification samples are included with copies of the signed notification of successful verification forms in Appendix C. These same samples were transferred to USEPA under chain-of-custody for analysis at its contract laboratory. The results from analysis of the samples by the contract laboratory are included in Appendix E.

5.1.3 Eastern Excavation Boundary Sample

As discussed in Section 3.0, a discrete soil sample was collected in the area exhibiting the highest observed gamma readings (50,000 cpm). This sample was collected from a depth of 3 feet bgs at approximately the center of the eastern excavation boundary wall of Area C (refer to Figure 1 or the exclusion zone figure in Appendix C). The sample exhibited a total radium level of 148.33 pCi/g (refer to NUTRANL results in Appendix D – sample ID #933).

5.2 Air Monitoring Analytical Results

5.2.1 Site Perimeter Air Monitoring

Perimeter high-volume air monitoring for particulate airborne radioactivity was conducted whenever excavation of radiologically-impacted material was being conducted. The air monitoring samples were analyzed the day after collection and again after four days to allow for the short-lived progeny to decay. The daily and weekly air concentrations were compared to the most limiting effluent concentration limit for thorium-232, which is 4E-15 μCi/ml based on 10 CFR 20 Appendix B Table 2 (Effluent Concentration Limits). No exceedances of the exposure limit for the site perimeter were documented for any day of monitoring. Perimeter air monitoring results are provided in Appendix F.

5.2.2 Personal Air Monitoring

Personal air monitoring (PAM) was conducted for all persons working in exclusion zones and those persons involved in the directing of the loading of material into shipping containers. PAM data for radioactivity for both one-day and four-day analyses are included in Appendix F. The data show no exceedances of the allowable exposure limits for this project. It should also be noted that the results of additional personal monitoring (i.e., personnel radiation badges) are discussed in Section 5.4.

5.3 Equipment Release Surveys

Excavating equipment used in the excavation of radiologically-impacted soil was required to be surveyed to confirm it was free of radiological impacts prior to being released from the site. This equipment was limited to the excavation bucket used to excavate and load the impacted material. To confirm the absence of impacts, the treads and other portions of the equipment where soil had accumulated were surveyed for contamination using field gamma survey instruments. For the excavator buckets, wipes were also taken in accordance with STS SOP 345, and alpha counts were made to confirm the absence of contamination. Limits listed in SOP 345 are currently those of 32 IAC 340 Appendix A (33 dpm/100 cm^2). However, in practice with "as low as reasonably achievable" (ALARA), the most restrictive federal level of 20 dpm/100 cm^2 for removable contamination from Table 1 of the Nuclear Regulatory Commission's Regulatory Guide 1.86 was used for equipment release. The alpha count survey results were well below this most restrictive level and are included in Appendix G.

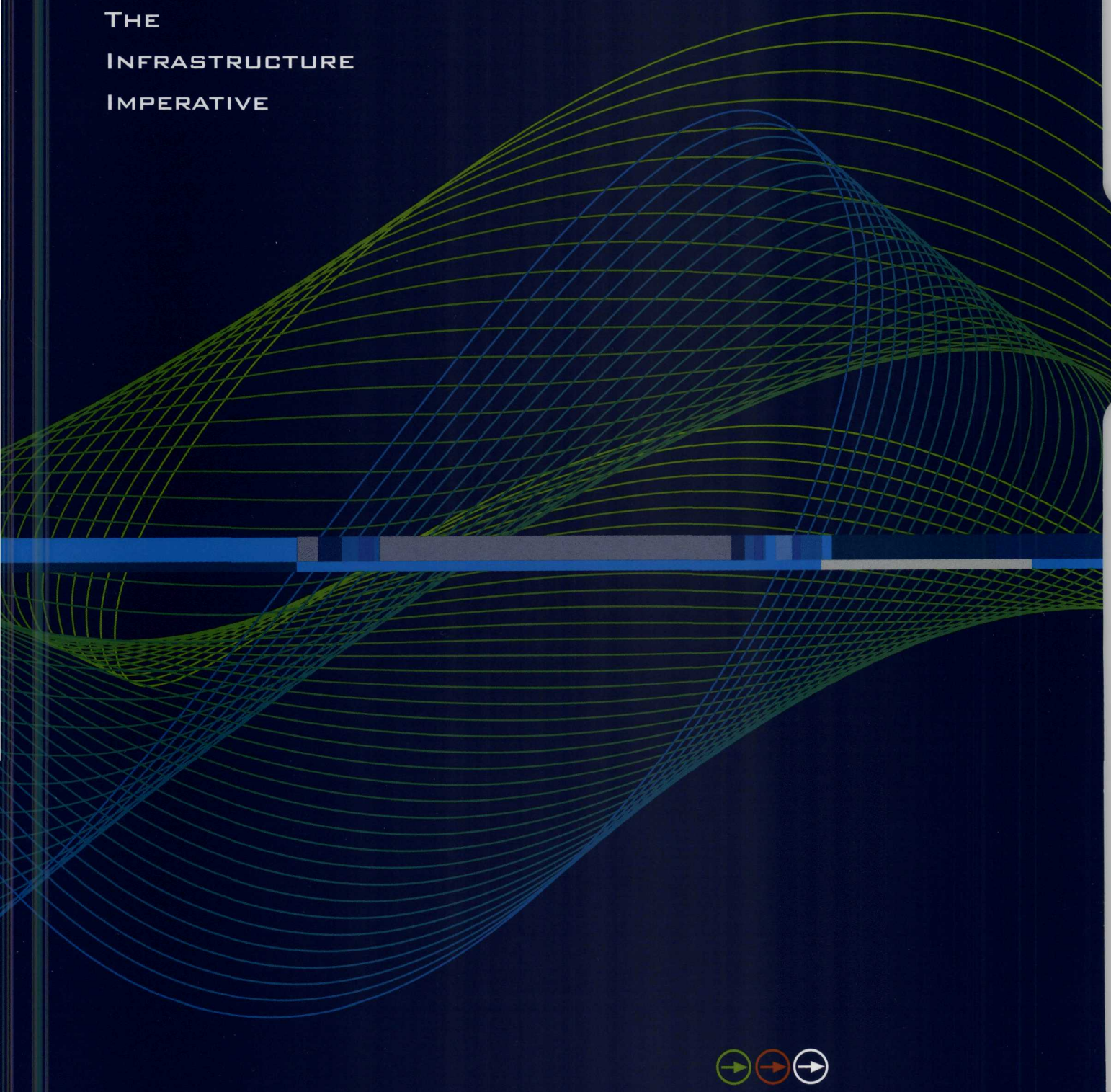
5.4 Personnel Radiation Badge Results

Personnel on site operating in the exclusion zones conducting gamma surveys or sampling, personnel assisting with the loading of the containers, and other persons potentially in contact with radiologically-impacted material were monitored with Optically Stimulated Luminesence (OSL) film badges during the project. The allowable exposure limit for occupation radiation workers is 5000 mrem/yr. No exceedances of the allowable exposures were measured for personnel on this project. The results of the film badge monitoring are presented in Appendix H.

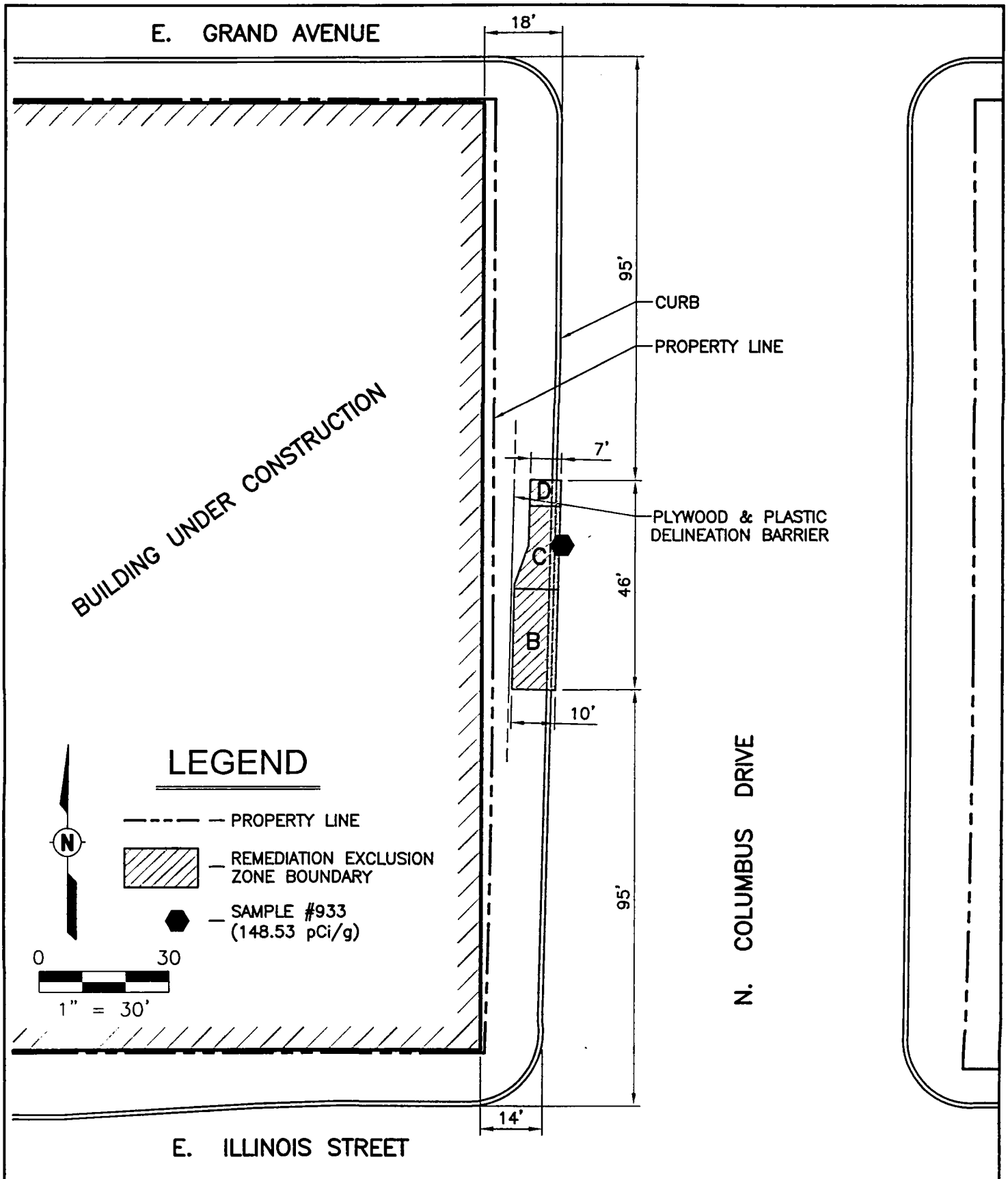
6.0 CONCLUSION

The work conducted to remove the radiologically-impacted soil beneath the western sidewalk in the right-of–way of North Columbus Drive between East Illinois and East Grand was completed in general accordance with the Work Plan (Appendix A) approved by USEPA on April 11, 2001 (Appendix B) and to the limits described in the USEPA Completion Letter of August 26, 2002 (Appendix B). The work completed at the site included obtaining signoff from the USEPA on notifications of successful verification for the excavation floor and the southern, western and northern boundaries of the excavated area. Thus, this Addendum and the work described herein, fulfill the off-site work requirement of the Amended UAO as indicated in the USEPA Completion Letter of August 26, 2002. As a result, STS Consultants (STS), Project Coordinator for this removal action, on behalf of Grand Pier Center, LLC, requests approval by the USEPA of the Addendum, and the issuance by USEPA of a closure completion letter in accordance with the UAO Docket number V-W-96-C-353.

The Infrastructure Imperative



Figures

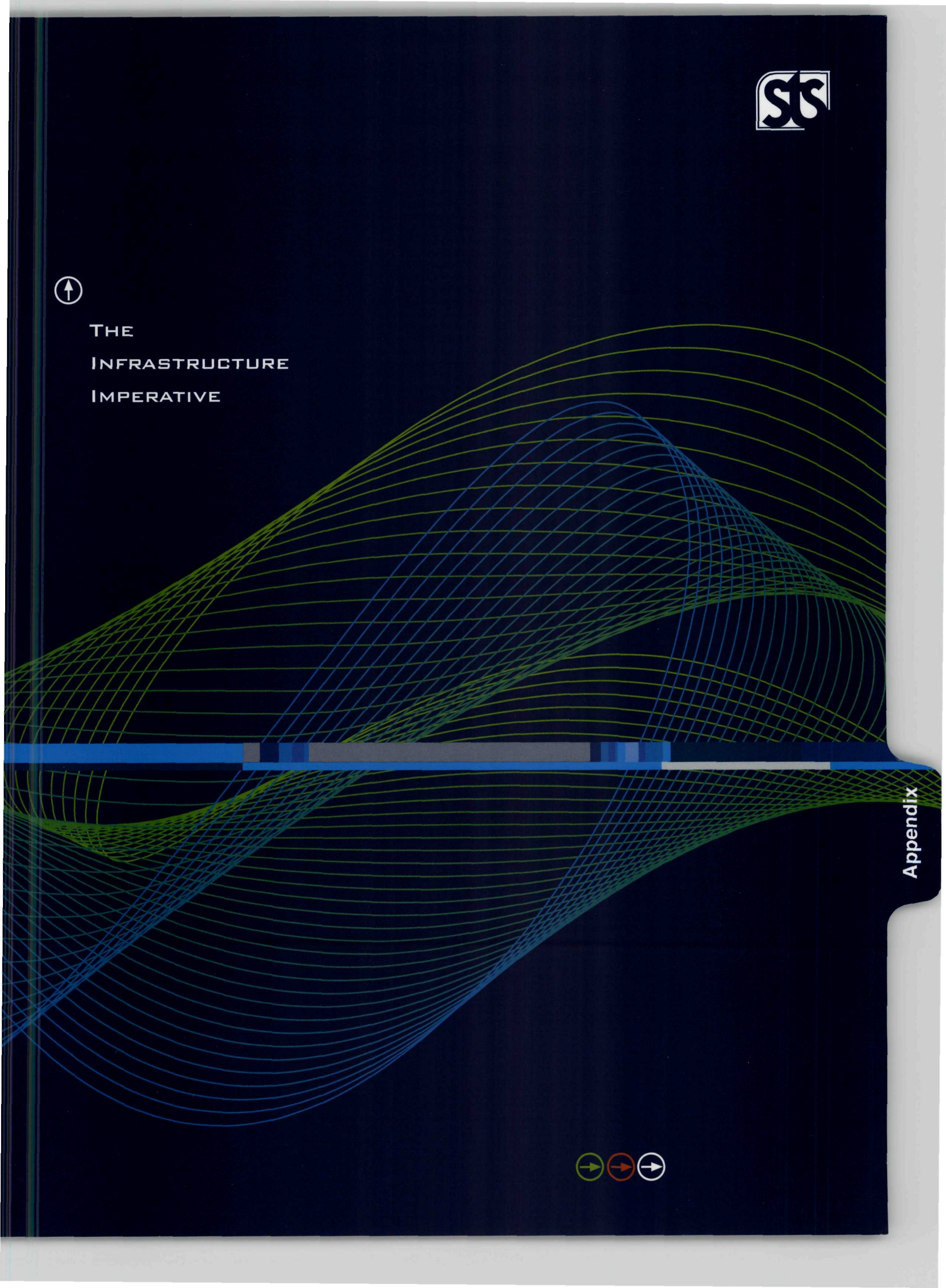


STS CONSULTANTS
750 Corporate Woods Pkwy.
Vernon Hills, IL 60061
847-279-2500
www.stsconsultants.com

COLUMBUS DRIVE SIDEWALK REMEDIATION AREA

GRAND PIER CENTER
200 EAST ILLINOIS STREET
CHICAGO, ILLINOIS

Drawn :	BWS	6/9/2004
Checked:	SCK	6/9/2004
Approved:	DJH	6/9/2004
PROJECT NUMBER	24418-YM	
FIGURE NUMBER	1	


The
Infrastructure
Imperative
Appendix

APPENDIX A

Columbus Drive Sidewalk Remediation Work Plan

R E P O R T

Grand Pier Center LLC
401 N. Michigan Ave
Chicago, Illinois 60611

Columbus Drive Sidewalk RemediationWork Plan

Grand Pier Center
Chicago, Illinois

1-24418-XK

March 9, 2001

STS Consultants, Ltd.
Solutions through Science & Engineering

March 9, 2001

Ms. Verneta Simon, On-Scene Coordinator
Mr. Fred Micke, On-Scene Coordinator
U. S. Environmental Protection Agency
Region 5
77 W. Jackson Blvd., SE-5J
Chicago, Illinois 60604

RE: Work Plan for Columbus Drive Sidewalk Remediation - STS Project No. 1-24418-XK

Dear Ms. Simon and Mr. Micke:

Attached please find the Work Plan for the removal of the impacted soil beneath the Columbus Drive sidewalk. This plan presents our proposed approach to this removal, as discussed in the meeting at USEPA offices on February 21, 2001.

Please contact us with any questions or comments you may have regarding this plan.

Regards,

STS CONSULTANTS, LTD.

Richard G. Berggreen, C.P.G.
Principal Geologist

cc: Michael Witte, Grand Pier Center LLC
Rick Mueller, Johnson & Bell
Thomas Dimond, Mayer, Brown & Platt
John Curtiss, AIG
Harold Holmberg, Kerr-McGee, Oklahoma City
Mark Krippel, Kerr-McGee, West Chicago
Vincent Oleszkiewicz, Baker & McKenzie

750 Corporate Woods Parkway • Vernon Hills, IL 60061-3153 • (847) 279-2500 • (847) 279-2510 Fax

GRAND PIER CENTER
COLUMBUS DRIVE SIDEWALK REMEDIATION WORK PLAN

1.0 INTRODUCTION

Construction of the Grand Pier Center involved removal of thorium-impacted soils present on the site. In the course of the construction and removal, impacted soil was identified at several locations beneath the sidewalks surrounding the subject site. The horizontal extent of the impacted soils into and beneath the rights-of-way was not evident based on surface scans. In most cases, the detected and measured concentrations were removed by extending the excavations some small distance into the right-of-way, or the concentrations that remained were relatively low, close to the remediation criteria. In those cases, the locations have been noted and any further work in those areas will be performed acknowledging the potential to encounter these soils.

At one location along the eastern side of the site, beneath the Columbus Drive sidewalk, the concentrations are sufficiently above the clean-up criteria that the U. S. Environmental Protection Agency (USEPA) specified that the soil would be removed to the curb line, remediating beneath the width of the sidewalk. There are several constraints to removing the material to the curb line, including utilities which are located beneath the sidewalk and the adjacent street, concerns with the stability of the excavation adjacent to the street, and restrictions on street closings which would be required for this work.

This Work Plan presents the proposed method for this removal, including consideration of the constraints and the options for meeting the objective of removing the higher levels of impacted soil from beneath the right-of-way.

2.0 REMOVAL SCOPE OF WORK

The previous excavations on the Grand Pier Center site were made for two purposes, to remove the impacted soil encountered, and to excavate foundation elements, including along the Columbus Drive side of the site, a trench for the construction of the foundation grade beams. At this location, an effort was made to excavate the impacted soil under the sidewalk, including excavation into portions of the right-of-way an estimated 6 feet (see Figure 1). However, relatively high levels of impacted soil remained in the excavation wall. As a result of the levels of radiation that remained, steel plates were placed against the trench wall to provide the construction workers with shielding, in addition to the plywood sheeting and plastic membrane that was used to isolate the impacted soil. Those plates were placed over the highest levels measured in surveying the wall. Those plates were left in place when the excavation was backfilled after the grade beams were constructed. The locations of those plates are shown on Figure 1.

The survey of the wall identified that the soil from immediately beneath the sidewalk to a depth of approximately 3 feet was below the clean-up criteria. This may be attributed to the placement of clean backfill following the installation of the City of Chicago electric conduit beneath the sidewalk at a depth of approximately 3.5 feet. This apparently clean material and the position of the City of Chicago electric conduit are shown on the cross section on Figure 1.

In that the objective is to remove the impacted soils that are substantially above the cleanup criteria, several options are available for managing the removal. The highest levels of impacted soil lie in a zone from perhaps 3 feet deep to perhaps 6 feet deep, and along a width of perhaps 15 feet. Lower concentrations of impacted soil extend to the natural soil at approximately 8 feet deep. Additionally, the width of the elevated concentrations is limited to the areas shielded by the steel plates, with lower concentrations laterally along the wall of the former excavation to the north and south.

The City of Chicago electric conduit is proposed to be left in place. Excavation around the line can be done by hand if necessary, as long as the exposed length is kept to a minimum. It may be necessary to provide temporary support while being excavated. Flowable fill may be used as backfill to support the conduit following the removal effort. It will be necessary to obtain an opinion from the Chicago Department of Transportation or the proper agency with jurisdiction as to the length which can be exposed without support, the type of support required, and the required backfill material. Inquiries in this regard are currently being made.

A limitation on the length of trench which can be exposed at one time will also contribute to constraining the stability concerns with regard to the adjacent street. With regard to the street, however, it is proposed to slope the excavation embankment from the street toward the site. This slope provides for support and buttressing the street. Standard excavation specifications are anticipated to require 1.5 horizontal to 1 vertical slopes. It is proposed to seek authorization to steepen these slopes to as steep as 1 to 1, with provision for the following measures to minimize slope instability issues. The length of exposed trench will be limited to a maximum of some design length, say 8 feet (to be determined following engineering review by the City of Chicago). No persons will be permitted in the excavation with over-steepened slopes. The duration of time during which the excavation is open will be limited by requesting that USEPA personnel be on-site to confirm adequate excavation, as the excavation proceeds. The need for on-site USEPA presence is based on safety and stability issue concerns. Scheduling USEPA personnel will be resolved before excavation begins. The excavated section will be backfilled with clean fill before the next section is excavated. Any indications of pending instability such as sloughing of the walls or developing cracks in the adjacent street or sidewalk will be cause for immediate backfill to limit potential movements. Adequate backfill materials will be staged near the excavation to respond as soon as feasible.

Figure 1 shows a plan view of the current conditions and a cross section of two options for excavation. It is recommended that the option involving some minor excavation encroachment into the curb lane of Columbus Drive, perhaps 2 feet outside the curb, be pursued. The slope of the excavation would start beneath the pavement and subgrade for Columbus Drive, perhaps 18 inches below street grade. The slope in the limited excavations would be 1 vertical to 1 horizontal. This would allow for the removal of all except a small wedge of soil beneath the outside (street-side) edge of the sidewalk right-of-way. It is possible, in that the distribution of the elevated concentrations of impacted soil is not known, that this excavation scenario will be sufficient to remove all impacted material, or at least will remove material to the low levels which have been allowed to remain elsewhere.

With regard to the lower concentrations of impacted soils to the north and south of the portion of the sidewalk with the elevated readings, the removal effort is proposed to be limited. In compliance with the allowed width of excavation permitted for stability, only those soils immediately adjacent to the high readings will be removed, or the excavation will proceed to apparently clean soil, whichever is less. This is likely to limit the entire excavated length in a north-south direction to perhaps 20 to 30 to feet. This is a majority of the approximately 30 to 40 foot length of the impacted zone which was removed in this area. Alternatively, if the excavation can be limited to only the high concentrations behind the steel sheets, the stability issues and excavated volumes can be reduced and more confidently managed. In considering the need to obtain approval for the proposed excavation from the City of Chicago Department of Transportation, it is recommended that the less material which is proposed to be excavated and the sooner the work can be backfilled, the more likely the work can be approved.

At a minimum, the western curb lane of Columbus Drive will need to be closed. The sidewalk will need to be closed. It may be possible to route the sidewalk traffic onto Columbus Drive under a canopy occupying a portion of the curb lane.

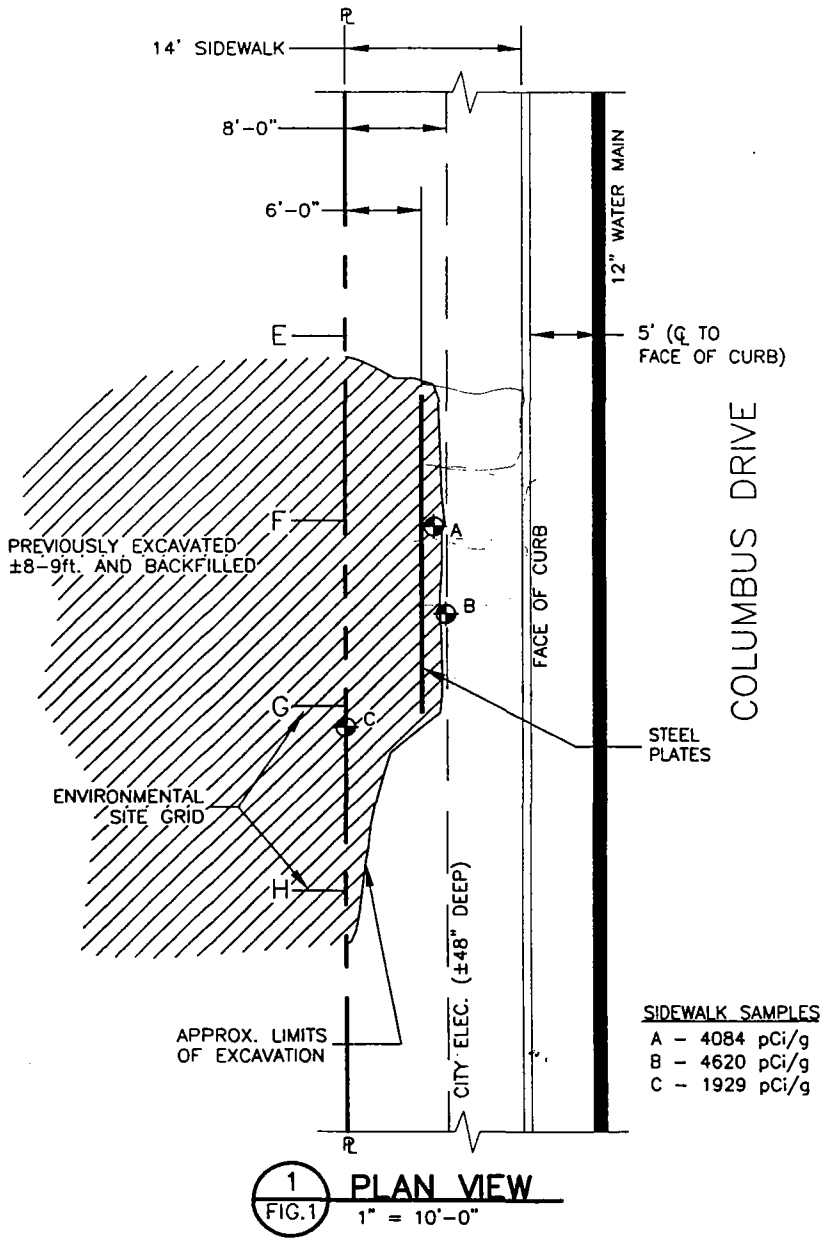
The anticipated volume of impacted material is on the order of 30 to 35 cubic yards. This estimate is based on 25 feet length, north to south, a thickness of 5 feet from 3 to 8 feet deep, and an average width of 7 feet from the current excavation limit at the steel plates to the sloping back of the excavation. It is anticipated that the thorium-impacted soil will be loaded directly into shipping containers for transport and disposal. No temporary storage is anticipated for the excavated, impacted soil. The apparently clean overburden will be staged adjacent to the excavation and tested before being released for use as clean backfill.

3.0 SCHEDULE

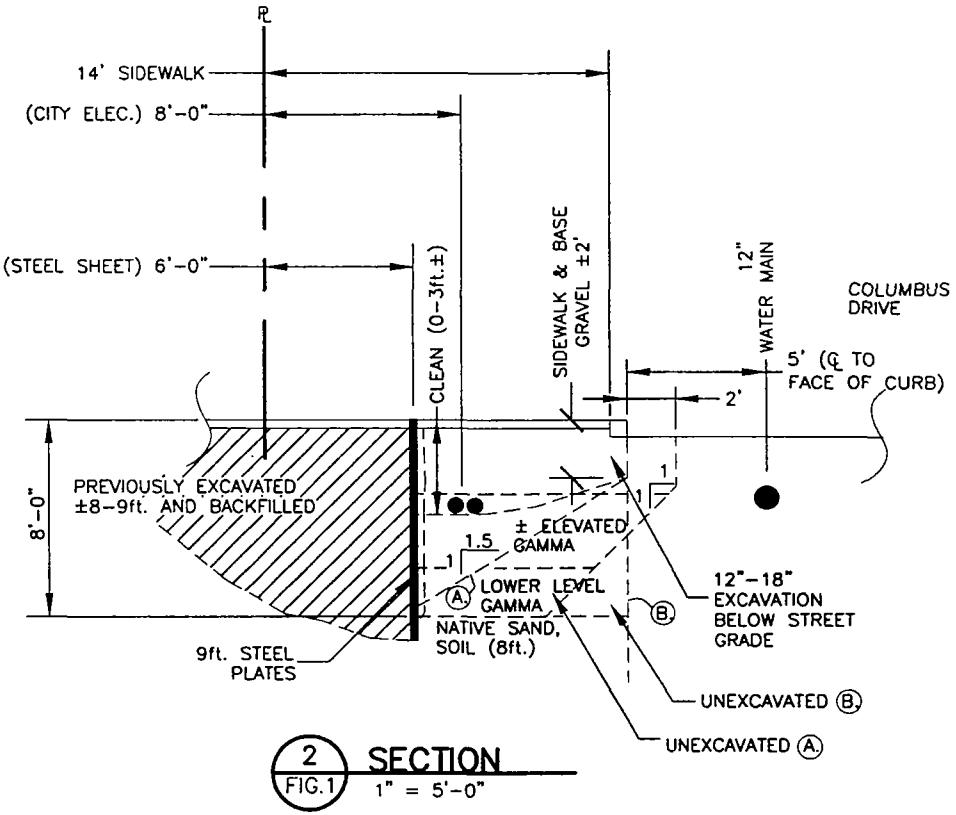
Permits for the excavation and for the lane closing will be required before beginning this work. Board of Underground review and approval will involve an anticipated 60 days. Following receipt of permits, delivery of the containers will be scheduled, which may take 2 weeks to procure. Coordination with the permit review process may allow containers to be ordered during the permit review.

The actual date for the work will depend on when the lane can be closed. The City of Chicago Department of Transportation will dictate when the lane(s) can be closed. It is recognized that a moratorium on street closings will likely be set for late June-early July for the Taste of Chicago festival. It is anticipated the actual excavation work will be completed in one or two days.

Following the completion of this removal, a summary report will be prepared as an addendum to the North Columbus RV3 report.



1 FIG.1 **PLAN VIEW**
1" = 10'-0"



2 FIG.1 **SECTION**
1" = 5'-0"

(A) START EXCAVATION AT CURBLINE, 18" DEEP. SLOPED 1.5:1

(B) ANTICIPATE MODEST ENCROACHMENT (±2ft.) OUTSIDE CURB INTO STREET. STEEPEN SLOPE 1:1, EXCAVATING A MINIMUM WIDTH BEFORE BACKFILL.

DRAWN BY	TJC	DATE 3/5/01
CHECKED BY	RGB	DATE 3/5/01
APPROVED BY	RGB	DATE 3/5/01

CADFILE X:\PROJECTS\24418\xk\SW-REMEDIATION.dwg

COLUMBUS DRIVE SIDEWALK REMEDIATION
EXCAVATION OPTIONS

GRAND PIER CENTER
CHICAGO, IL

STS Consultants Ltd.
Consulting Engineers

STS PROJECT NO.
24418-XK

STS PROJECT FILE
SW-REMEDIATION.dwg

SCALE
AS SHOWN

FIGURE NO.
FIG. 1

APPENDIX B

Correspondence with USEPA

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

REPLY TO THE ATTENTION OF:

SE-5J

April 11, 2001

VIA FACSIMILE AND U.S. MAIL

Mr. Richard G. Berggreen, C.P.G.
STS Consultants, Ltd.
750 Corporate Woods Parkway
Vernon Hills, IL 60061-3153

RE: Columbus Drive Sidewalk Remediation Workplan

Dear Mr. Berggreen:

The U.S. Environmental Protection Agency (USEPA) has reviewed the Workplan for the Columbus Drive Sidewalk Remediation dated March 9, 2001. USEPA hereby approves the aforementioned Workplan.

Work at the Columbus Drive sidewalk can begin immediately. However, USEPA requests that the work schedule for this project be given to USEPA, as soon as possible, so that we can assure proper coverage for this project. In addition, if radioactive material is left "in-place" at the completion of this project, USEPA will require that plastic sheeting be used to delineate the radioactive material from the backfill.

If you have questions regarding this letter, please contact me, as soon as possible, at (312) 886-5123 or contact Verneta Simon, On-Scene Coordinator, at (312) 886-3601, or Larry Jensen, Senior Health Physicist at (312) 886-5026.

Sincerely,

Fredrick A. Micke

Fredrick A. Micke, P.E.
On-Scene Coordinator
ERB Section #3

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

August 26, 2002

REPLY TO THE ATTENTION OF SE-5J

VIA FACSIMILE AND U.S. MAIL

Mr. Richard Berggreen, C.P.G.
STS Consultants, Ltd.
750 Corporate Woods Parkway
Vernon Hills, Illinois 60061-3153

Re: Completion of On-Site Work under Order No. V-W-96-C-353 for the Lindsay Light II Site, RV3 North Columbus Drive Site (200 East Illinois Street), Chicago, Cook County, Illinois As Issued June 6, 1996 and Amended on March 29, 2000.

Dear Mr. Berggreen:

The United States Environmental Protection Agency issued a Unilateral Administrative Order No. V-W-96-C-353 (UAO) on June 6, 1996 to Kerr-McGee Chemical, Corporation and The Chicago Dock & Canal Trust requiring removal of thorium contamination from the Lindsay Light Ii Site located at 316 East Illinois Street, Chicago, Cook County, Illinois. On March 29, 2000, U.S. EPA amended the UAO (Amended UAO) to also include the property located across Columbus Drive bearing the Cook County's Assessor's Parcel Number 17 10 212 019 (the SIte or Grand Pier Site). This Completion Letter covers only the on-site portion of the Grand Pier Site located at 200 East Illinois Street as described in the Amended UAO issued March 29, 2000. For the purposes of this Notice of Completion, "on-site" is defined as the real property identified as Cook County's Assessor's Parcel Number 17 10 212 019 that is bounded by, but does not include any remaining thorium contamination underlying the adjacent sidewalks or street right-of-ways of East Illinois Street, North Columbus Drive, East Grand Avenue, and St. Clair Street. This Completion Letter concludes that upon receipt of bound final report which incorporate all editorial changes requested in a separate letter dated June 14, 2002, that all on-site work required by the Amended UAO at Grand Pier will be complete and no further on-site removal activities are necessary. This Completion letter also determines that all off-site work required by the Amended UAO has not been completed. Specifically, the removal of thorium contamination beneath the Columbus Drive sidewalk right-of-way as described in your U.S. EPA-approved workplan dated April 11, 2001, which is required by Section V, 3. Paragraph g. of the UAO and Amended UAO. Paragraph g. requires "...off-site surveying and sampling as necessary and, at a minimum, implement 40 CFR 192, if deemed necessary should contamination be discovered beyond current site boundaries."

The June 6, 1996 UAO required removal of thorium contamination from the 316 East Illinois Street site that the Chicago Dock & Canal Trust identified in an extent of contamination study

Chicago Dock performed pursuant to an Administrative Order by Consent, No. V-W-94-C-22 dated January 27, 1994. The UAO also required Chicago Dock & Canal Trust to excavate and dispose of all characterized wastes identified and generated during removal activities. After the discovery of elevated levels of radioactive materials at the Grand Pier site on February 29, 2000 the Amended UAO was issued to Kerr-McGee Chemical Corporation, River East L.L.C. (the former Chicago Dock & Canal Trust), and Grand Pier Center L.L.C..

The UAO and the Amended UAO required the following work:

1) Develop and implement site health, safety and security measures.

2) Develop and implement air monitoring program.

3) Remove contamination until the cleanup criterion of 5 picoCuries per gram total radium (radium-226 + radium-228) over background is achieved. This cleanup criterion will be met in each 15 centimeter layer below the surface. Averaging over areas up to 100 square meters will be allowed, but only after reasonable efforts have been made to achieve levels As Low As Reasonably Achievable (ALARA). It is not U.S. EPA's intent to leave any elevated areas of contamination if at all possible.

5) Transport and dispose of all characterized or identified hazardous substances, pollutants, wastes or contaminants at a RCRA/CERCLA/IDNS approved disposal facility in accordance with the U.S. EPA off-site policy.

6) Conduct off-site surveying and sampling as necessary and, at a minimum, implement 40 CFR 192, if deemed necessary should contamination be discovered beyond current site boundaries.

7) Backfill all excavations with suitable material, and if soil, test borrow source for radioactivity and other pertinent characteristics in 40 CFR Part 261.

Pursuant to the Amended UAO, Grand Pier Center L.L.C. through their consultant, STS Consultants Ltd., submitted a workplan on March 20, 2000. U.S. EPA approved the workplan, on March 23, 2000. In total, 10,606.4 tons of thorium impacted soil were shipped to Envirocare in Clive, Utah. On July 3, 2001, STS Consultants Ltd. submitted a final report on their activities at the site, as required by the Amended UAO.

U.S. EPA's Superfund Division performed oversight of the PRP's activities at this site. Superfund Division reviewed the final report..

This notice of completion in no way releases River East, L.L,C. and Kerr-McGee Chemical L.L.C, or Grand Pier Center L.L.C. from any potential future obligations to perform additional work to address the same or other conditions at the site, at the 341 East Ohio (North McClurg Court) Site, or at off-site locations associated with the Lindsay Light II facility. Similarly, this

notice of completion does not release River East, L.L.C. Kerr-McGee, Chemical L.L,C., and Grand Pier Center L.L.C. from any recordkeeping, payment, penalties for any violation of the Order or other obligations under the Order that extend beyond the date of this notice.

Please contact me at (312) 886-5123 or Mary Fulghum, Associate Regional Counsel at (312) 886-4683 if you have any questions concerning this letter.

Sincerely,

Fredrick A. Micke

Fredrick A. Micke, P.E.
On-Scene Coordinator, ERB #3

cc: Mark Kripple, Kerr-McGee
J.T. Smith, Covington & Burling
Vincent S. Oleszkiewicz, Baker and McKenzie
Fredrick Moeller, Johnson & Bell

STS CONSULTANTS

STS Consultants, Ltd.
750 Corporate Woods Parkway
Vernon Hills, Illinois 60061-3153

voice 847-279-2500
fax 847-279-2510
web www.stsconsultants.com

May 4, 2004

Ms. Verneta Simon, On-Scene Coordinator
U. S. Environmental Protection Agency
Region 5
77 W. Jackson Blvd., SE-5J
Chicago, Illinois 60604

RE: Notification of Intent to Conduct Remedial Activities, Grand Pier Center – Columbus Drive Sidewalk Remediation - STS Project No. 1-24418-YM

Dear Ms. Simon:

This letter provides written notification that remediation of the radiologically-impacted soils beneath the Columbus Drive sidewalk at the above referenced site is anticipated to be initiated on May 17, 2004 pending receipt of all city permits. As indicated in the Work Plan[1], the removal of the radiologically-impacted soil is anticipated to be accomplished in one week with restoration of the sidewalk and curb completed following the removal activities. It is also worth noting that during the remediation phase, STS Consultants, Ltd. (STS) anticipates that verification surveys may be necessary on a daily basis due to the potential requirement for daily backfilling of the excavation. STS will be in contact with you in the near future to verify your receipt of this letter and determine if the USEPA has any additional information requests.

In the meantime, please feel free to contact us regarding the project and associated activities.

Regards,

STS CONSULTANTS, LTD.

Steven C. Kornder, Ph.D.
Senior Project Geochemist

Thomas Jakubczyk, R.A.
Associate Architect

cc: J. Brandt, CM&D
K. Curran, Ungaretti & Harris LLP
C. Staley, Bovis
J.T. Smith, Covington & Burling
F. Mueller, Johnson & Bell, Ltd.

[1] Grand Pier Center – Columbus Drive Sidewalk Remediation Work Plan, STS March 2001.

APPENDIX C

USEPA Signed Notification of Successful Verification Sampling Forms

Site Map

STS Consultants, Ltd.

RADIATION SURVEY FORM

Project # 24418-ym Project Name Columbus Drive Page 1 of 1

Date 5/25/04 Technician Tim O'Brien

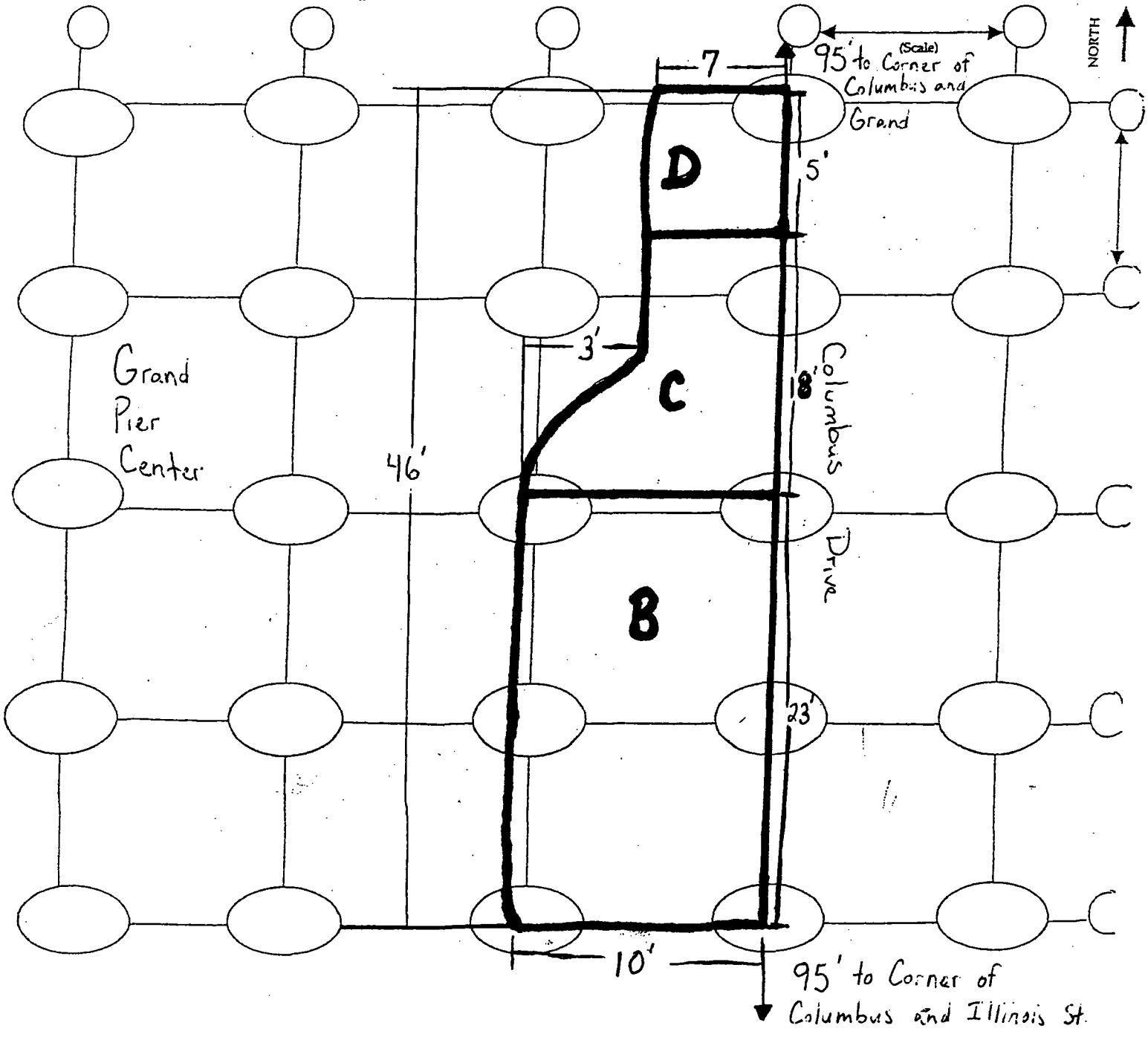
Inst. Model _____ Serial No. _____

Probe Type: 1'x1'Nal / 2"x2" Nal
Shielded / Not Shielded

Lift Elevation _____

Background _____ cpm Action Level _____ cpm

Write grid designations in circles. Record highest counts for grid in cpm. Record 30 second counts at grid intersections (if required). Shade areas of elevated counts and record max cpm.



FORM 223-1
NOTIFICATION OF SUCCESSFUL VERIFICATION SURVEY

Area Identification: "B"

Date of Verification Survey: 5/24/04

Time of Verification Survey 13:00 am/pm

The above-described excavation was surveyed at the time and date indicated above. The survey indicated that all soils have been removed as required by the Site Removal Action Criteria.

Documents pertaining to this survey are attached for review and approval by the U S. EPA.

Signed:

[signature] 5/24/04 Date

DUHAMAIN F. GUERRIER (Print Name)

Site Coordinator (Print Title)

STS Consultants, Ltd.
Solutions through Science & Engineering

The attached Verification Survey documents were reviewed by U.S. EPA, Region V on 5/24/04. The results of this survey indicate that the verification criteria as contained in the UAO, have been met.

Authorization is hereby granted to commence backfill and restoration work at this excavation.

Signed:

[signature] Date 5/24/04

Verneta Simon (Print Name)

On-Scene Coordinator (Print Title)

For U.S. EPA Region V

Nutranl Gamma Spec Report- Grand Pier: Columbus Drive Sidewalk

Exclusion Zone Confirmatory Samples for May 24, 2004

Sample ID	Sample Date	Sample Group	Description	Weight	U-238 Activity	U-238 Uncertainty	Th-232 Activity	Th-232 Uncertainty	Ra-226 Activity	Ra-226 Uncertainty	Total Radium Activity	Total Radium Uncertainty
947	5/24/04	EPA	GPCD (B) EPA #1	35.5	-0.86	2.16	2.83	0.68	0.48	0.88	3.31	1.112115102
948	5/24/04	EPA	GPCD (B) EPA #2	35.3	0.69	1.78	0.92	0.57	2.26	0.76	3.18	0.95
949	5/24/04	EPA	GPCD (B) EPA #3	34.2	-2.6	2.17	1.7	0.69	1.35	0.93	3.05	1.158015544
950	5/24/04	EPA	GPCD (B) EPA #4	33.4	0.15	2.13	1.37	0.67	1.76	0.9	3.13	1.12200713
951	5/24/04	EPA	GPCD (B) EPA #5	34.6	1.73	2.5	1.07	0.78	2.26	1.05	3.33	1.308013761

Average Total Radium (Th-232+Ra-226) Concentration for : GPCD (B) EPA: 3.20 pCi/g

FORM 223-1
NOTIFICATION OF SUCCESSFUL VERIFICATION SURVEY

Area Identification: "C" Grand Ave Cobalt Dr. Sidewalk

Date of Verification Survey: 5/24/04

Time of Verification Survey 8:30 (am)/pm

The above-described excavation was surveyed at the time and date indicated above. The survey indicated that all soils have been removed as required by the Site Removal Action Criteria.

Documents pertaining to this survey are attached for review and approval by the U.S. EPA.

Signed:

[signature] 5/24/04 Date

Dumarais F. Guerrier (Print Name)

Site Coordinator (Print Title)

STS Consultants, Ltd.
Solutions through Science & Engineering

The attached Verification Survey documents were reviewed by U.S. EPA, Region V on 5/24/04. The results of this survey indicate that the verification criteria as contained in the UAO, have been met.

Authorization is hereby granted to commence backfill and restoration work at this excavation.

Signed:

[signature] Date 5/24/04

Veenita Simon (Print Name)

On-Scene Coordinator (Print Title)

For U.S. EPA Region V

Nutranl Gamma Spec Report- Grand Pier: Columbus Drive Sidewalk

Exclusion Zone Confirmatory Samples for May 24, 2004

Sample ID	Sample Date	Sample Group	Description	Weight	U-236 Activity	U-238 Uncertainty	Th-232 Activity	Th-232 Uncertainty	Ra-226 Activity	Ra-226 Uncertainty	Total Radium Activity	Total Radium Uncertainty
952	5/24/04	EPA	GPCD (C) EPA #1	31.6	-0.45	2.02	1.58	0.64	0.36	0.85	1.94	1.06400188
953	5/24/04	EPA	GPCD (C) EPA #2	31.3	-1.15	2.58	0.74	0.81	2.07	1.11	2.81	1.374117899
954	5/24/04	EPA	GPCD (C) EPA #3	31.3	0.32	2.16	0.87	0.67	1.23	0.9	2.1	1.12200713
955	5/24/04	EPA	GPCD (C) EPA #4	32.6	-1.81	1.84	0.23	0.58	1.85	0.81	2.08	0.996242942
956	5/24/04	EPA	GPCD (C) EPA #5	32.5	0.65	2.58	2.14	0.79	0.11	1.01	2.25	1.282263623

Average Total Radium (Th-232+Ra-226) Concentration for : GPCD (C) EPA: 2.24 pCi/g

FORM 223-1
NOTIFICATION OF SUCCESSFUL VERIFICATION SURVEY

Area Identification: Area "D" Columbus Drive / Ground Fire

Date of Verification Survey: 5/25/04

Time of Verification Survey _____ am/pm

The above-described excavation was surveyed at the time and date indicated above. The survey indicated that all soils have been removed as required by the Site Removal Action Criteria.

Documents pertaining to this survey are attached for review and approval by the U.S. EPA.

Signed: _____ 5/25/04 Date

DUMAS F. GUERRIER (Print Name)

Site Coordinator (Print Title)

STS Consultants, Ltd.
Solutions through Science & Engineering

The attached Verification Survey documents were reviewed by U.S. EPA, Region V on 5/25/04. The results of this survey indicate that the verification criteria as contained in the UAO, have been met.

Authorization is hereby granted to commence backfill and restoration work at this excavation.

Signed: _____ Date 5/25/04

Veneta Simon (Print Name)

On-Scene Coordinator (Print Title)

For U.S. EPA Region V

Nutranl Gamma Spec Report- Grand Pier: Columbus Drive Sidewalk

Exclusion Zone Confirmatory Samples for May 25, 2004

Sample ID	Sample Date	Sample Group	Description	Weight	U-238 Activity	U-238 Uncertainty	Th-232 Activity	Th-232 Uncertainty	Ra-226 Activity	Ra-226 Uncertainty	Total Radium Activity	Total Radium Uncertainty
960	5/25/04	EPA	S2683 GPCD (D) EPA #1	29.3	4.94	2.95	0.73	0.87	0.4	1.17	1.13	1.458012346
961	5/25/04	EPA	S2684 GPCD (D) EPA #2	28.5	-0.58	1.62	0.41	0.51	1.33	0.7	1.74	0.866083137
962	5/25/04	EPA	S2685 GPCD (D) EPA #3	28.9	-2.58	1.96	1.44	0.63	-0.43	0.81	1.01	1.026157883
963	5/25/04	EPA	S2686 GPCD (D) EPA #4	30.3	-0.32	2.28	0.06	0.73	1.06	0.98	1.12	1.222006547
964	5/25/04	EPA	S2687 GPCD (D) EPA #5	30.8	0.31	1.78	0.79	0.56	0.34	0.74	1.13	0.928008621

Average Total Radium (Th-232+Ra-226) Concentration for : GPCD (D) EPA: 1.23 pCi/g

APPENDIX D

Radiological Soil Sample Analyses - NUTRANL

Nutranl Gamma Spec Report — Grand Pier Project: Columbus Drive Sidewalk

Complete Report of Samples Analyzed from May 18, 2004 - May 25, 2004

Sample ID	Sample Date	Sample Group	Description	Weight	U-238 Activity	U-238 Uncertainty	Th-232 Activity	Th-232 Uncertainty	Ra-226 Activity	Ra-226 Uncertainty	Total Radium Activity	Total Radium Uncertainty
924	5/18/2004	background	bkg051804	7.5	-0.44	2.41	-0.24	0.75	-0.18	1.07	-0.42	1.30667517
925	5/18/2004	soil standard	soilstd051804	36.9	0	2.1	5.95	0.64	1.11	0.81	7.06	1.032327467
926	5/19/2004	background	bkg051904	7.5	-2.21	1.41	-0.13	0.46	0	0.63	-0.13	0.7800641
927	5/19/2004	soil standard	soilstd051904	36.9	0.58	3.88	6.5	1.2	-0.09	1.47	6.41	1.897603752
928	5/19/2004	GP exclusion zone	S2659 GPCD EZ#1	27.6	-11.98	7.01	52.1	2.11	32.97	2.71	85.07	3.434559652
929	5/19/2004	GP exclusion zone	S2660 GPCD EZ#2	19.4	-66.96	16.66	154.29	5	19.32	6.09	173.61	7.879600244
930	5/19/2004	GP exclusion zone	S2661 GPCD EZ#3	30.3	-137.45	29.66	313.36	8.95	150.32	11.33	463.68	14.43853871
931	5/20/2004	background	bkg052004	7.5	0.47	2.3	-0.61	0.73	0.36	1	-0.25	1.238103388
932	5/20/2004	soil standard	soilstd052004	36.9	2.08	3.07	3.49	0.94	4.59	1.26	8.08	1.572005089
933	5/20/2004	GP exclusion zone	S2662 GPCD Wall Spot EZ	17.6	-107.68	17.81	122.23	5.53	26.1	6.85	148.33	8.803601536
934	5/20/2004	Pre EPA	S2663 GPCD PreEPA#1N	22.4	-2.32	3.71	2.75	1.16	-0.84	1.42	1.91	1.833575742
935	5/20/2004	Pre EPA	S2664 GPCD PreEPA#2S	38.9	-3.1	2.75	1.43	0.89	-0.47	1.15	0.96	1.454166428
936	5/21/2004	background	bkg052104	7.5	5.29	2.05	-0.66	0.6	-0.02	0.83	-0.68	1.024158191
937	5/21/2004	soil standard	soilstd052104	36.9	-2.07	5.71	5.52	1.76	2.27	2.29	7.79	2.888200132
938	5/21/2004	EPA	S2665 GPCD (A) EPA#1	37.6	2.63	2.22	2.27	0.68	0.27	0.89	2.54	1.120044642
939	5/21/2004	EPA	S2666 GPCD (A) EPA#2	37.5	1.03	2.67	1.54	0.83	1.75	1.09	3.29	1.370036496
940	5/21/2004	EPA	S2667 GPCD (A) EPA#3	34.3	-1.19	2.33	1.03	0.74	2.6	1.01	3.63	1.252078272
941	5/21/2004	EPA	S2668 GPCD (A) EPA#4	37.8	0.07	2.48	1.38	0.78	1.13	1.04	2.51	1.3
942	5/21/2004	EPA	S2669 GPCD (A) EPA#5	37.6	2.46	2.28	1.29	0.69	1.28	0.93	2.57	1.158015544
943	5/21/2004	Pre EPA	S2670 GPCD Pre EPA #3	33.6	-3.05	3.41	2.52	1.1	1.06	1.39	3.58	1.772596965
944	5/21/2004	Pre EPA	S2671 GPCD Pre EPA #4	33.5	2.17	3.19	1.84	0.97	3.17	1.31	5.01	1.630030675
945	5/24/2004	soil standard	soilstd052404	36.9	-1.74	2.23	4.67	0.71	2.18	0.9	6.85	1.146342008
946	5/24/2004	background	bkg052404	7.5	0.24	2.74	-0.49	0.85	-0.35	1.14	-0.84	1.422005626
947	5/24/2004	EPA	S2672 GPCD (B) EPA #1	35.5	-0.86	2.16	2.83	0.68	0.48	0.88	3.31	1.112115102
948	5/24/2004	EPA	S2673 GPCD (B) EPA #2	35.3	0.69	1.78	0.92	0.57	2.26	0.76	3.18	0.95
949	5/24/2004	EPA	S2674 GPCD (B) EPA #3	34.2	-2.6	2.17	1.7	0.69	1.35	0.93	3.05	1.158015544

Nutranl Gamma Spec Report — Grand Pier Project: Columbus Drive Sidewalk

Complete Report of Samples Analyzed from May 18, 2004 - May 25, 2004

Sample ID	Sample Date	Sample Group	Description	Weight	U-238 Activity	U-238 Uncertainty	Th-232 Activity	Th-232 Uncertainty	Ra-226 Activity	Ra-226 Uncertainty	Total Radium Activity	Total Radium Uncertainty
950	5/24/2004	EPA	S2675 GPCD (B) EPA #4	33.4	0.15	2.13	1.37	0.67	1.76	0.9	3.13	1.12200713
951	5/24/2004	EPA	S2676 GPCD (B) EPA #5	34.6	1.73	2.5	1.07	0.78	2.26	1.05	3.33	1.308013761
952	5/24/2004	EPA	S2677 GPCD (C) EPA #1	31.6	-0.45	2.02	1.58	0.64	0.36	0.85	1.94	1.06400188
953	5/24/2004	EPA	S2678 GPCD (C) EPA #2	31.3	-1.15	2.58	0.74	0.81	2.07	1.11	2.81	1.374117899
954	5/24/2004	EPA	S2679 GPCD (C) EPA #3	31.3	0.32	2.16	0.87	0.67	1.23	0.9	2.1	1.12200713
955	5/24/2004	EPA	S2680 GPCD (C) EPA #4	32.6	-1.81	1.84	0.23	0.58	1.85	0.81	2.08	0.996242942
956	5/24/2004	EPA	S2681 GPCD (C) EPA #5	32.5	0.65	2.58	2.14	0.79	0.11	1.01	2.25	1.282263623
957	5/24/2004	Pre EPA	S2682 GPCD (D)	32.4	1.48	3.74	1.22	1.15	0.46	1.54	1.68	1.922004162
958	5/25/2004	soil standard	soilstd052504	36.9	3.53	2.1	4.49	0.64	3.06	0.82	7.55	1.04019229
959	5/25/2004	background	bkg052504	7.5	-1.28	1.72	-0.21	0.54	0.54	0.75	0.33	0.924175308
960	5/25/2004	EPA	S2683 GPCD (D) EPA #1	29.3	4.94	2.95	0.73	0.87	0.4	1.17	1.13	1.458012346
961	5/25/2004	EPA	S2684 GPCD (D) EPA #2	28.5	-0.58	1.62	0.41	0.51	1.33	0.7	1.74	0.866083137
962	5/25/2004	EPA	S2685 GPCD (D) EPA #3	28.9	-2.58	1.96	1.44	0.63	-0.43	0.81	1.01	1.026157883
963	5/25/2004	EPA	S2686 GPCD (D) EPA #4	30.3	-0.32	2.28	0.06	0.73	1.06	0.98	1.12	1.222006547
964	5/25/2004	EPA	S2687 GPCD (D) EPA #5	30.8	0.31	1.78	0.79	0.56	0.34	0.74	1.13	0.928008621

Notes:

1) The sample indicated as "background" is an empty vial inserted into the instrument in the same manner as a soil sample. The empty vial is used to verify that absence of background influences (positive or negative) on the instrumentation. Acceptable results for the background sample are ± 1.0 pCi/g.

2) The sample indicated as "soil standard" is a soil sample in the range of the USEPA cleanup level of 7.1 pCi/g total radium. The soil sample was from one of the initial remedial projects in the Streeterville area. It was originally used as a cross-check between laboratories during the initial projects and is now used as daily consistency sample to show repeatability of the instrumentation.

APPENDIX E

USEPA Contract Laboratory Analytical Data

ANALYTICAL CHEMISTRY LABORATORY
Argonne National Laboratory
Argonne, IL 60439

REPORT OF ANALYTICAL RESULTS

Sample Material: Soil
Submitted By: L. Jensen, USEPA

Date Received: 5/25/04
Date Reported: 7/12/04

Submitter's Sample No.	ACL Sample No.	Gamma-emitting Radionuclides					
		Reporting Unit: pCi/g					
		Ra-226		Ra-228		K-40	
		pCi/g	±1σ	pCi/g	±1σ	pCi/g	±1σ
GPCD(B)	04-0251-01	1.4	0.1	1.4	0.1	9.3	0.2
GPCD(C)	04-0251-02	1.5	0.1	1.5	0.1	9.9	0.2
GPCD(D)	04-0251-03	0.6	0.1	0.5	0.1	8.2	0.2

NOTE: Unused sample material will be returned to the Client. Prepared samples will be discarded one (1) month after the date of this report unless other arrangements are made. When making future inquiries regarding this report, please reference the ACL sample number(s) above. For further information about the results reported here, please call Vivian Sullivan at 630-252-1890.

Reference(s): CMT Notebook 1837 pg. 129

Copies To: L. Jensen, USEPA
A. Boparai
S. Lopykinski
D. Bowers
ACL File

Analyst(s): V. Sullivan

VSS: 7/12/04
VTS: 7/13/04
VTS for VSS

Report No.: 04-0251.vss.gam.xls

APPENDIX F

Air Monitoring Results

a. Perimeter Air Monitoring
b. Personal Air Monitoring

a. Perimeter Air Monitoring

Area Air Monitoring Summary Sheet - Weekly Effluent Concentration Report

Grand Pier Project - Columbus Drive Sidewalk Chicago, IL

North Monitor **Report #1 5/17/04-5/24/04** **(High Volume)**

Date	Time Sampled (minutes)	Effluent Concentration in uCi/ml	Concentration x Sample Min / Day	Comments
5/18/2004	486	0.00E+00	0.00E+00	
5/19/2004	410	7.46E-16	3.06E-13	
5/20/2004	499	0.00E+00	0.00E+00	
5/21/2004	645	0.00E+00	0.00E+00	
5/24/2004	650	0.00E+00	0.00E+00	
	2690	7.46E-16	3.06E-13	

$C_{avg} = \frac{\Sigma T_{s,i} C_i}{\Sigma T_s}$

Eq A.9 NUREG 1400

Time Weighted Weekly Effluent Concentration (North) = 1.14E-16 uCi/ml

Percentage of Release Limit of 4E-15uCi/ml = 2.84%

South Monitor

Date	Time Sampled (minutes)	Effluent Concentration in uCi/ml	Concentration x Sample Min / Day	Comments
5/18/2004	488	0.00E+00	0.00E+00	
5/19/2004	410	0.00E+00	0.00E+00	
5/20/2004	500	5.56E-16	2.78E-13	
5/21/2004	652	0.00E+00	0.00E+00	
5/24/2004	650	8.18E-16	5.32E-13	
	2700	1.37E-15	8.10E-13	

$C_{avg} = \frac{\Sigma T_{s,i} C_i}{\Sigma T_s}$

Eq A.9 NUREG 1400

Time Weighted Weekly Effluent Concentration (South) = 3.00E-16 uCi/ml

Percentage of Release Limit of 4E-15uCi/ml = 7.50%

West Monitor ONE

Date	Time Sampled (minutes)	Effluent Concentration in uCi/ml	Concentration x Sample Min / Day	Comments
5/18/2004	562	0.00E+00	0.00E+00	
5/19/2004	398	0.00E+00	0.00E+00	
5/20/2004	513	0.00E+00	0.00E+00	
5/21/2004	638	0.00E+00	0.00E+00	
5/24/2004	645	0.00E+00	0.00E+00	
	2756	0.00E+00	0.00E+00	

$C_{avg} = \frac{\Sigma T_{s,i} C_i}{\Sigma T_s}$

Eq A.9 NUREG 1400

Time Weighted Weekly Effluent Concentration (East) = 0.00E+00 uCi/ml

Percentage of Release Limit of 4E-15uCi/ml = 0.00%

West Monitor TWO

Date	Time Sampled (minutes)	Effluent Concentration in uCi/ml	Concentration x Sample Min / Day	Comments
5/18/2004	559	0.00E+00	0.00E+00	
5/19/2004	404	1.51E-15	6.10E-13	
5/20/2004	504	0.00E+00	0.00E+00	
5/21/2004	638	4.67E-16	2.98E-13	
5/24/2004	640	4.15E-16	2.66E-13	
	2745	2.39E-15	1.17E-12	

$$C_{avg} = \frac{\Sigma T_{s,i} C_i}{\Sigma T_s}$$

Eq A.9 NUREG 1400

Time Weighted Weekly
Effluent Concentration (West) = 4.28E-16 uCi/ml

Percentage of Release Limit of = 10.69%

NOTE: Average Air Concencentrations were obtained over 5 working days. Excavation started on Tuesday May 18, 2004 and was completed on Monday May 24, 2004.

b. **Personal Air Monitoring**

Area Air Monitoring Summary Sheet - Staplex High Volume Pumps (Daily Analysis)

Grand Pier Project - Columbus Drive Sidewalk *Chicago, IL*

Report No. 1 **Monday May 17, 2004 - Monday May 24, 2004**

Sample ID	date sampled	start time	stop time	total time sampled (min)	cubic ft/ min (CFM)	sample volume analyzed (ml)	day after analysis					four day analysis					% of Limit 4.00E-15 uCi/ml
							date analyzed	gross counts	bkg counts	net cpm	Concentration in uCi/ml	date analyzed	gross counts	bkg counts	net cpm	Concentration in uCi/ml	
CDN001	5/18/2004	8:09am	4:15pm	486	50	2.41E+07	5/19/2004	38	11	0.9	1.36E-14	5/24/2004	12	13	0	0.00E+00	0.00%
CDS001	5/18/2004	8:12am	4:20pm	488	53	2.56E+07	5/19/2004	44	11	1.1	1.56E-14	5/24/2004	13	13	0	0.00E+00	0.00%
CDW101	5/18/2004	6:56am	4:18pm	562	46	2.56E+07	5/19/2004	58	11	1.56667	2.22E-14	5/24/2004	11	13	0	0.00E+00	0.00%
CDW201	5/18/2004	6:58am	4:17pm	559	49	2.71E+07	5/19/2004	51	11	1.33333	1.79E-14	5/24/2004	13	13	0	0.00E+00	0.00%
CDN002	5/19/2004	6:55am	1:45pm	410	40	1.63E+07	5/20/2004	41	12	0.96667	2.16E-14	5/24/2004	14	13	0.033	7.46E-16	18.64%
CDS002	5/19/2004	6:57am	1:47pm	410	50	2.03E+07	5/20/2004	44	12	1.06667	1.91E-14	5/24/2004	12	13	0	0.00E+00	0.00%
CDW102	5/19/2004	7:02am	1:40pm	398	48	1.89E+07	5/20/2004	47	12	1.16667	2.24E-14	5/24/2004	12	13	0	0.00E+00	0.00%
CDW202	5/19/2004	7:04am	1:48pm	404	40	1.60E+07	5/20/2004	46	12	1.13333	2.57E-14	5/24/2004	15	13	0.067	1.51E-15	37.83%
CDN003	5/20/2004	7:53am	4:12pm	499	47	2.32E+07	5/21/2004	146	12	4.46667	6.99E-14	5/25/2004	11	12	0	0.00E+00	0.00%
CDS003	5/20/2004	7:50am	4:10pm	500	44	2.18E+07	5/21/2004	208	12	6.53333	1.09E-13	5/25/2004	13	12	0.033	5.56E-16	13.90%
CDW103	5/20/2004	7:55am	4:28pm	513	44	2.24E+07	5/21/2004	187	12	5.83333	9.48E-14	5/25/2004	10	12	0	0.00E+00	0.00%
CDW203	5/20/2004	7:57am	4:21pm	504	45	2.25E+07	5/21/2004	176	12	5.46667	8.84E-14	5/25/2004	12	12	0	0.00E+00	0.00%
CDN004	5/21/2004	6:50am	5:35pm	645	48	3.07E+07	5/24/2004	16	13	0.1	1.18E-15	5/26/2004	10	12	0	0.00E+00	0.00%
CDS004	5/21/2004	6:53am	5:45pm	652	51	3.30E+07	5/24/2004	13	13	0	0.00E+00	5/26/2004	12	12	0	0.00E+00	0.00%
CDW104	5/21/2004	7:00am	5:38pm	638	46	2.91E+07	5/24/2004	15	13	0.06667	8.33E-16	5/26/2004	12	12	0	0.00E+00	0.00%
CDW204	5/21/2004	7:02am	5:40pm	638	41	2.59E+07	5/24/2004	11	13	0	0.00E+00	5/26/2004	13	12	0.033	4.67E-16	11.69%
CDN005	5/24/2004	6:50am	5:40pm	650	49	3.16E+07	5/25/2004	21	12	0.3	3.46E-15	5/28/2004	11	11	0	0.00E+00	0.00%
CDS005	5/24/2004	6:53am	5:43pm	650	46	2.96E+07	5/25/2004	24	12	0.4	4.91E-15	5/28/2004	13	11	0.067	8.18E-16	20.45%
CDW105	5/24/2004	6:57am	5:42pm	645	43	2.75E+07	5/25/2004	32	12	0.66667	8.82E-15	5/28/2004	11	11	0	0.00E+00	0.00%
CDW205	5/24/2004	6:58am	5:38pm	640	46	2.92E+07	5/25/2004	24	12	0.4	4.98E-15	5/28/2004	12	11	0.033	4.15E-16	10.38%

- No excavation performed on Monday May 17, 2004 - Area Air Monitoring not required
- Excavation completed on Monday May 24 - no further air monitoring required
- Weekly effluent air concentration is calculated on 5 working days, rather than 2 separate weeks (see attached)

Personal Air Monitoring Summary Sheet (PAM's -Daily Analysis)

Report No. 1 May 17 - May 24, 2004

Grand Pier Project - Columbus Drive Sidewalk *Chicago, IL*

*** All PAM's with elevated counts on day after analysis are recounted after 4 days (see attached)

Date Collected	Name	Sample ID	PAM #	Flow Rate (lpm)	total time sampled (min)	Total Sample Volume (ml)	Analysis Date	Gross Counts (30 min)	Bkg Counts (30 min)	Net CPM	Sample Concentration (uCi/ml)	
5/18/2004	Glenn Huber	CD1001	002-574	2.5	563	1407500	5/19/2004	11	11	0.00	0.00E+00	
5/18/2004	Fabian Rebollar	CD1002	006-234	2.5	568	1420000	5/19/2004	9	11	0.00	0.00E+00	
5/20/2004	Glenn Huber	CD1003	002-574	2.5	385	962500	5/21/2004	12	12	0.00	0.00E+00	
5/20/2004	Fabian Rebollar	CD1004	006-234	2.5	530	1325000	5/21/2004	16	12	0.13	2.56E-14	*
5/20/2004	Ricardo Nieblas	CD1005	002-766	2.5	530	1325000	5/21/2004	12	12	0.00	0.00E+00	
5/21/2004	Glenn Huber	CD1006	002-766	2.5	652	1630000	5/24/2004	12	13	0.00	0.00E+00	
5/21/2004	Fabian Rebollar	CD1007	006-234	2.5	649	1622500	5/24/2004	14	13	0.03	5.23E-15	*
5/21/2004	Ricardo Nieblas	CD1008	002-574	2.5	590	1475000	5/24/2004	11	13	0.00	0.00E+00	
5/24/2004	Tim O'Brien	CD1009	002-574	2.5	595	1487500	5/25/2004	10	12	0.00	0.00E+00	
5/24/2004	Fabian Rebollar	CD1010	006-234	2.5	606	1515000	5/25/2004	12	12	0.00	0.00E+00	

Note: Official airborne Th-232 concentrations are obtained from 4 Day Analysis.
See attached 4 Day Analysis Form for Occupational Dose Limit Information.

Personal Air Monitoring Summary Sheet (PAM's -4 Day Analysis)

Report No. 1 May 17 - May 24, 2004

Grand Pier Project - Columbus Drive Sidewalk *Chicago, IL*

***Note: All samples on this page were analyzed after 4 days to allow for thorium daughter decay

Date Collected	Name	Sample ID	PAM #	Flow Rate (lpm)	total time sampled (min)	Total Sample Volume (ml)	Analysis Date	Gross Counts (30 min)	Bkg Counts (30 min)	Net CPM	Sample Concentration (uCi/ml)	% of DAC
5/20/2004	Fabian Rebollar	CD1004	006-234	2.5	530	1325000	5/25/2004	12	12	0.00	0.00E+00	0.00%
5/21/2004	Fabian Rebollar	CD1007	006-234	2.5	649	1622500	5/26/2004	11	12	0.00	0.00E+00	0.00%

Occupational Dose Limit for Occupational Radiation Exposure = 5 rem Total Effective Dose Equivalent

2000 DAC-Hours = 5 rem

DAC (Derived Air Concentration) for Th-232 = 5E-13uCi/ml

Administrative Site Limit for Occupational Exposure = 30% Th-232 DAC = 1.5E-13 uCi/ml

APPENDIX G

Equipment Release Survey Results

RADIATION SURVEY FORM

GrandPier - Colonels Dr

SURVEY REFERENCE #: 001

DATE OF SURVEY: 5/20/04

NAME OF SURVEYOR: Tim O'Brien

SURVEY METER IDENTIFICATION: **Mfg: Ludlum**

Background Reading: 0.02 **mR/hr** **Model:** 3

Serial: 95056

INSTRUMENT ID: **Mfg: Ludlum**

Background Reading: 0.4 **cpm** **Model: 2200 (scaler) / 43-10 (alpha)**

Efficiency: 0.354 **%** **Serial:** 100220

MDA: **dpm**

Description (attached sketch if needed) (Area, equipment, vehicle, materials, etc.)	Item #	Gross mR/hr	Gross cpm	dpm per 100 sq. cm
Concrete Curb from Colonels	1	Bkg	1	1.7
Drive 3 Passes	2	Bkg	0	0
	3	Bkg	1	1.7

RADIATION SURVEY FORM

SURVEY REFERENCE #: 002 Grid Pt - Robert Dr Sidewalk

DATE OF SURVEY: 5/24/04

NAME OF SURVEYOR: Glen Huber / Tim O'Brien

SURVEY METER IDENTIFICATION: **Mfg: Ludlum**

Background Reading: 0.02 **mR/hr** **Model:** 3

Serial: 95076

INSTRUMENT ID: **Mfg: Ludlum**

Background Reading: 0 47 **cpm** **Model: 2200 (scaler) / 43-10 (alpha)**

Efficiency: .354 **%** **Serial:** 202770

MDA: **dpm**

Description (attached sketch if needed) (Area, equipment, vehicle, materials, etc.)	Item #	Gross mR/hr	Gross cpm	dpm per 100 sq. cm
3 Concrete Pieces removed	1	0.2	1	1.6
Post Excavation	2	0.2	0	0
	3	0.2	0	0
Broadcasting Backhoe Bucket				
inside	4	0.2	2	4.4
outside	5	0.2	0	0

APPENDIX H

Film Badge Results

STAN A HUBER CON INC
ATTN STAN HUBER
200 N CEDAR ROAD
NEW LENOX IL 60451

LANDAUER®

Landauer, Inc. 2 Science Road Glenwood, Illinois 60425-1586
Telephone: (708) 755-7000 Facsimile: (708) 755-7016
www.landauerinc.com

luxel®

RADIATION DOSIMETRY REPORT

ACCOUNT NO	SERIES CODE	ANALYTICAL WORK ORDER	REPORT DATE	DOSIMETER RECEIVED	REPORT TIME IN WORK DAYS	PAGE NO
67627	NL1	0415550001	06/09/04	06/03/04	4	1 OF 1

PARTICIPANT NUMBER	NAME: ID NUMBER	NAME: BIRTH DATE	NAME: SEX	DOSIMETER	USE	RADIATION QUALITY	DOSE EQUIVALENT (MREM) FOR PERIODS SHOWN BELOW: DEEP DDE	DOSE EQUIVALENT (MREM) FOR PERIODS SHOWN BELOW: EYE LDE	DOSE EQUIVALENT (MREM) FOR PERIODS SHOWN BELOW: SHALLOW SDE	QUARTERLY ACCUMULATED DOSE EQUIVALENT (MREM): DEEP DDE	QUARTERLY ACCUMULATED DOSE EQUIVALENT (MREM): EYE LDE	QUARTERLY ACCUMULATED DOSE EQUIVALENT (MREM): SHALLOW SDE	YEAR TO DATE DOSE EQUIVALENT (MREM): DEEP DDE	YEAR TO DATE DOSE EQUIVALENT (MREM): EYE LDE	YEAR TO DATE DOSE EQUIVALENT (MREM): SHALLOW SDE	LIFETIME DOSE EQUIVALENT (MREM): DEEP DDE	LIFETIME DOSE EQUIVALENT (MREM): EYE LDE	LIFETIME DOSE EQUIVALENT (MREM): SHALLOW SDE	RECORDS FOR YEAR	INCEPTION DATE (MM/YY)
FOR MONITORING PERIOD:							05/01/04 - 05/31/04			QTR 2			2004							
00NL1	CONTROL			P	CNTRL		M	M	M										2	10/78
00154				P	WHBODY		M	M	M	M	M	M	M	M	M	M	M	M	1	05/04
00157				P	WHBODY		M	M	M	M	M	M	M	M	M	M	M	M	1	05/04
00158				P	WHBODY		M	M	M	M	M	M	M	M	M	M	M	M	1	05/04
00159				P	WHBODY		M	M	M	M	M	M	M	M	M	M	M	M	1	05/04

M: MINIMAL REPORTING SERVICE OF 1 MREM

QUALITY CONTROL RELEASE: DRB

1 - PR 8004 - RPT1308- N1 - 15501

NVLAP®
NVLAP LAB CODE 100518-0

Radiation Safety Training Attendance

Grand Pier Center – Columbus Drive Sidewalk

Topic: Radiation Safety

Instructor: Glenn Huber

Date: May 17, 2004

Name	Company	Social Security #	Date of Birth	Badge # Issued	Signature
WBALDO JUAREZ	Brandenburg	[redacted]		00154	Wbaldo Juarez
RICARDO NIEBLAS	BRANDENBURG			00155	RICARDO NIEBLAS
FABIAN REBOLLAR	BRANDENBURG			00156	Fabian Rebollar
Jim ROWAN	Brandenburg			00157	Jim Rowan
Glenn Huber	SAIC			00158	
Tim O'Brien	SAIC			00159	

Note: The Health Physicist reported that two dosimetry badges (Nos. 155 and 156) were reported lost by the personnel to whom they were issued.

APPENDIX I

Shipping Manifests

3-98

UNIFORM LOW-LEVEL RADIOACTIVE WASTE MANIFEST

SHIPPING PAPER

1. EMERGENCY TELEPHONE NUMBER (Include Area Code)
In Case of Emergency Call CHEMTREC 1-800-424-93 9300

ORGANIZATION
Kerr-McGee Chemical LLC

2. IS THIS AN "EXCLUSIVE USE" SHIPMENT? [X] YES [ ] NO

2. TOTAL NUMBER OF PACKAGES IDENTIFIED ON THIS MANIFEST ==> 1

4. DOES EPA REGULATED WASTE REQUIRING A MANIFEST ACCOMPANY THIS SHIPMENT? [ ] YES [X] NO
If "Yes," provide Manifest Number ==>

EPA MANIFEST NUMBER
NA

5. SHIPPER - NAME AND FACILITY
Kerr-McGee Chemical LLC
P.O. Box 548
800 Weyrauch Street
West Chicago, IL 60185

UTAH PERMIT NUMBER: 0110 000 013

SHIPMENT NUMBER 0454

CONTACT
Mark Krippel

6. CARRIER - Name and Address
Union Pacific Railroad
1416 Dodge Street
Omaha, NE. 68179

CONTACT
Dale Bray

SIGNATURE - Authorized carrier acknowledging waste receipt

SHIPPER I.D. NUMBER
0858

COLLECTOR

PROCESSOR

GENERATOR TYPE
X Industrial

TELEPHONE NUMBER (Include Area Code)
630-293-8330

EPA I.D. NUMBER
NA

SHIPPING DATE
5/18/2004

TELEPHONE NUMBER (Include Area Code)
888-877-7267

Date
5/18/2004

7. NRC FORM 540 AND 540A — PAGE 1 OF 1 PAGES
NRC FORM 541 AND 541A — PAGE 1 OF 1 PAGES
NRC FORM 542 AND 542A — Not Used
ADDITIONAL INFORMATION — PAGE 1 OF 1 PAGES

9. CONSIGNEE - Name and Facility Address
Envirocare of Utah, Inc.
Clive Disposal Site
Interstate 80, Exit 49
Clive, UT 84029 L 72578

SIGNATURE - Authorized consignee acknowledging waste receipt

10. CERTIFICATION
This is to certify that the herein-named materials are properly classified, described, packaged, marked, and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation. This also certifies that the materials are classified, packaged, and labeled and are in proper condition for transportation and disposal as described in accordance with the requirements of 10 CFR Parts 20 and 61, or equivalent state regulations.

AUTHORIZED SIGNATURE
Steve Hawks (signature on shippers file copy)

TITLE
Site Manager

DATE
5/18/2004

8. MANIFEST NUMBER
(Use this number on all continuation pages)
0659-02- 0454

CONTACT
Shipping and Receiving

TELEPHONE NUMBER
(435) 884-0155

DATE
5/26/04

11. U.S. DEPARTMENT OF TRANSPORTATION DESCRIPTION (Including proper shipping name, hazard class, UN ID number, and any additional information)	12 DOT LABEL "RADIOACTIVE"	13 TRANSPORT INDEX	14 PHYSICAL AND CHEMICAL FORM	15 INDIVIDUAL RADIONUCLIDES	16 TOTAL PACKAGE ACTIVITY MBq	16 TOTAL PACKAGE ACTIVITY mCi	17 LSA/SCO CLASS	18. TOTAL WEIGHT OR VOLUME (Use appropriate units)	19. IDENTIFICATION NUMBER OF PACKAGE
Radioactive Material, Low Specific Activity,	NA	NA	Solid / Thorium Oxide	Th-232, Ra-226, Th-230, U-nat	1.33E+02	3.60E+00	LSA-1	20.525 tons	BKRU012986
N.O.S.,Class 7, UN 2912, LSA-1								405 cubic feet	
Questions on Billing Call Steve Hawks 405-2	03-5689								
Rail Contract UP-C-21537									
STCC Code 4929133 Prepaid									
DO NOT HUMP									
PLACARDED									
ROUTE: UP Canal Street, Chicago- Clive, UT									

FOR CONSIGNEE USE ONLY

___ Record Waste Description Inadequate
___ Contamination or Leakage Detected
___ Unexpected Exposure Rates Detected
___ Labels, Markings, etc. Inadequate
___ Container Integrity Inadequate
✓ Other
___ No Violations Detected on this Shipment

20. TERMS AND CONDITION

A: HAZARDOUS MATERIALS. Generator represents & warrants that Waste Material ___ is (or) X is not a hazardous waste as defined in 40 CFR 261. Where the material is a hazardous waste, this shipment is also accompanied by a separate and complete hazardous waste manifest, along with the appropriate land-disposal restriction notice and/or certification as required by 40 CFR 268.1

B: TITLE: Upon acceptance at the disposal site by Envirocare of Utah, Inc., and all appropriate regulatory authorities, title to the Waste Material which conforms to Generator's representation herein shall thereupon transfer from the Generator and be vested in Envirocare of Utah, Inc.

C: WASTE MATERIAL: Generator represents and warrants that all data set forth in the (UNIFORM LOW-LEVEL RADIOACTIVE WASTE MANIFEST) are true and correct in all respects and in accordance with all applicable governmental laws, rules, regulations and Envirocare of Utah, Inc.'s facility license.

D: INDEMNIFICATION: Generator agrees to indemnify Envirocare of Utah, Inc., its officers, its employees and agents against all losses and liability whatsoever if such losses or liability results from the failure of the Waste Material to conform in all material respects to the data supplied on the (UNIFORM LOW-LEVEL RADIOACTIVE WASTE MANIFEST) or if the shipment fails to meet the standards presented by the Department of Transportation or any governmental agency having jurisdiction over such matters.

FORM 540 (3-98)

(5-88)

UNIFORM LOW-LEVEL RADIOACTIVE WASTE MANIFEST

SHIPPING PAPER

1. EMERGENCY TELEPHONE NUMBER (Include Area Code)
In Case of Emergency Call CHEMTREC 1-800-424-9300

ORGANIZATION
Kerr-McGee Chemical LLC

2. IS THIS AN "EXCLUSIVE USE" SHIPMENT? [X] YES [ ] NO

3. TOTAL NUMBER OF PACKAGES IDENTIFIED ON THIS MANIFEST ==> 1

4. DOES EPA REGULATED WASTE REQUIRING A MANIFEST ACCOMPANY THIS SHIPMENT? [ ] YES [X] NO
If "Yes," provide Manifest Number ==>

EPA MANIFEST NUMBER
N.A.

5. SHIPPER - NAME AND FACILITY
Kerr-McGee Chemical LLC
P.O. Box 548
906 Weyauch Street
West Chicago, IL 60185

UTAH PERMIT NUMBER: 0110 000 013

SHIPMENT NUMBER 0455

CONTACT
Mark Knippel

6. CARRIER - Name and Address
Union Pacific Railroad
1416 Dodge Street
Omaha, NE. 68179

CONTACT
Dale Bray

SIGNATURE - Authorized carrier acknowledging waste receipt

SHIPPER I.D. NUMBER
0659

COLLECTOR

PROCESSOR

GENERATOR TYPE [X] Industrial

TELEPHONE NUMBER (Include Area Code)
630 293 6330

EPA I.D. NUMBER
N.A.

SHIPPING DATE
5/18/2004

TELEPHONE NUMBER (Include Area Code)
888-877-7267

Date
5/18/2004

7. NRC FORM 540 AND 540A PAGE 1 OF 1 PAGE(S)
NRC FORM 541 AND 541A PAGE 1 OF 1 PAGE(S)
NRC FORM 542 AND 542A Not Used
ADDITIONAL INFORMATION Not Used

8. CONSIGNEE - Name and Facility Address
Envirocare of Utah, Inc.
Clive Disposal Site
Interstate 80, Exit 49
Clive, UT 84029

SIGNATURE - Authorized consignee acknowledging waste receipt

16. CERTIFICATION
This is to certify that the herein-named materials are properly classified, described, packaged, marked, and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation. This also certifies that the materials are classified, packaged, and labeled and are in proper condition for transportation and disposal as described in accordance with the requirements of 10 CFR Parts 20 and 61, or

AUTHORIZED SIGNATURE
Steve Hawks (signature on Shippers file copy)

TITLE
Site Manager

DATE
5/18/2004

8. MANIFEST NUMBER
(Use this number on all continuation pages)
0659-02- 0455

CONTACT
Shipping and Receiving

TELEPHONE NUMBER
(435) 884-0155

DATE 5/26/04

11. U.S. DEPARTMENT OF TRANSPORTATION DESCRIPTION (Including proper shipping name, hazard class, UN ID number, and any additional information)	12 DOT LABEL "RADIOACTIVE"	13 TRANSPORT INDEX	14 PHYSICAL AND CHEMICAL FORM	15 INDIVIDUAL RADIONUCLIDES	16 TOTAL PACKAGE ACTIVITY MBq	16 TOTAL PACKAGE ACTIVITY mCi	17 LSA/SCO CLASS	18. TOTAL WEIGHT OR VOLUME (Use appropriate units)	19. IDENTIFICATION NUMBER OF PACKAGE
Ore tailings and soils and debris containing	NA	NA	Solid / Thorium Oxide	Th-232, Ra-226, Th-230, U-nat	7.27E+01	1.96E+00	NA	20.5 tons	BKRU012922
small amounts of radioactive material with								405 cubic feet	
low radiological hazards.									
Rail Contract DER-UP-C-21537									
STCC Code 4929133 Prepaid									
DO NOT HUMP									
ROUTE: MM-Blue Island, IAIS-Grand Junction, UP - Clive									

FOR CONSIGNEE USE ONLY

___ Record Waste Description Inadequate
___ Contamination or Leakage Detected
___ Unexpected Exposure Rates Detected
___ Labels, Markings, etc. Inadequate
___ Container Integrity Inadequate
___ Other
✓ No Violations Detected on this Shipment

20. TERMS AND CONDITION

A HAZARDOUS MATERIALS: Generator represents & warrants that Waste Material ___ is (or) X is not a hazardous waste as defined in 40 CFR 261. Where the material is a hazardous waste, this shipment is also accompanied by a separate and complete hazardous waste manifest, along with the appropriate land-disposal restriction notice and/or certification as required by 40 CFR 268.1

B. TITLE: Upon acceptance at the disposal site by Envirocare of Utah, Inc., and all appropriate regulatory authorities, title to the Waste Material which conforms to Generator's representation herein shall thereupon transfer from the Generator and be vested in Envirocare of Utah, Inc.

C. WASTE MATERIAL: Generator represents and warrants that all data set forth in this (UNIFORM LOW-LEVEL RADIOACTIVE WASTE MANIFEST) are true and correct in all respects and in accordance with all applicable governmental laws, rules, regulations and Envirocare of Utah, Inc.'s facility license.

D. INDEMNIFICATION: Generator agrees to indemnify Envirocare of Utah, Inc., its officers, its employees and agents against all losses and liability whatsoever if such losses or liability results from the failure of the Waste Material to conform in all material respects to the data supplied on the (UNIFORM LOW-LEVEL RADIOACTIVE WASTE MANIFEST) or if this shipment fails to meet the standards prescribed by the Department of Transportation or any governmental agency having jurisdiction over such matters

FORM 540 (5-88)

UNIFORM LOW-LEVEL RADIOACTIVE WASTE MANIFEST

SHIPPING PAPER

1. EMERGENCY TELEPHONE NUMBER (Include Area Code)
In Case of Emergency Call CHEMTREC 1-800-424-9300

ORGANIZATION
Kerr-McGee Chemical LLC

2. IS THIS AN "EXCLUSIVE USE" SHIPMENT?
[X] YES
[ ] NO

3. TOTAL NUMBER OF PACKAGES IDENTIFIED ON THIS MANIFEST: 1

4. DOES EPA REGULATED WASTE REQUIRING A MANIFEST ACCOMPANY THIS SHIPMENT?
[ ] YES
[X] NO
If "Yes," provide Manifest Number:

EPA MANIFEST NUMBER
N.A.

5. SHIPPER - NAME AND FACILITY
Kerr-McGee Chemical LLC
P.O. Box 548
806 Weyrauch Street
West Chicago, IL 60185

UTAH PERMIT NUMBER: 0110 000 013

SHIPMENT NUMBER: 0456

CONTACT: Mark Koppel

6. CARRIER - Name and Address
Union Pacific Railroad
1416 Dodge Street
Omaha, NE. 68179

CONTACT: Dale Bray

SIGNATURE - Authorized carrier acknowledging waste receipt

SHIPPER I.D. NUMBER: 0659

COLLECTOR:

PROCESSOR:

GENERATOR TYPE: X Industrial

TELEPHONE NUMBER (Include Area Code): 630-293-6330

EPA I.D. NUMBER: N.A.

SHIPPING DATE: 5/20/2004

TELEPHONE NUMBER (Include Area Code): 888-877-7267

Date: 5/20/2004

7. NRC FORM 540 AND 540A: PAGE 1 OF 1 PAGE(S)
NRC FORM 541 AND 541A: PAGE 1 OF 1 PAGE(S)
NRC FORM 542 AND 542A: Not Used
ADDITIONAL INFORMATION: Not Used

8. CONSIGNEE - Name and Facility Address
Envirocare of Utah, Inc.
Clive Disposal Site
Interstate 80, Exit 49
Clive, UT 84029

L72639

SIGNATURE - Authorized consignee acknowledging waste receipt

9. MANIFEST NUMBER (Use this number on all continuation pages)
0659-02- 0456

CONTACT: Shipping and Receiving

TELEPHONE NUMBER: (435) 884-0155

DATE: 5/28/04

10. CERTIFICATION

This is to certify that the be-in-named materials are properly classified, described, packaged, marked, and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation. This also certifies that the materials are classified, packaged, and labeled and are in proper condition for transportation and disposal as described in accordance with the requirements of 10 CFR Parts 20 and 61, or

AUTHORIZED SIGNATURE: Steve Hawke (signature on Shippers file copy)

TITLE: Site Manager

DATE: 5/20/2004

11. U.S. DEPARTMENT OF TRANSPORTATION DESCRIPTION (Including proper shipping name, hazard class, UN ID number, and any additional information)	12 DOT LABEL "RADIOACTIVE"	13 TRANSPORT INDEX	14 PHYSICAL AND CHEMICAL FORM	15 INDIVIDUAL RADIONUCLIDES	16 TOTAL PACKAGE ACTIVITY MBq	16 TOTAL PACKAGE ACTIVITY Ci	17 LSA/SCO CLASS	18. TOTAL WEIGHT OR VOLUME (Use appropriate units)	19. IDENTIFICATION NUMBER OF PACKAGE
Ore tailings and soils and debris containing	NA	NA	Solid / Thorium Oxide	Th-232, Ra-226, Th-230, U-nat	8.48E+01	2.29E+00	NA	20.5 tons	BKRU025352
small amounts of radioactive material with								405 cubic feet	
low radiological hazards.									
Fed Contract DER-UP-C-21637									
STCC Code 4929130 Prepaid									
DO NOT HUMP									
ROUTE: MM-Blue Island, IMR-Grand Junction, UP - Clive									

FOR CONSIGNEE USE ONLY

___ Record Waste Description Inadequate
___ Contamination or Leakage Detected
___ Unexpected Exposure Rates Detected
___ Labels, Markings, etc. Inadequate
___ Container Integrity Inadequate
___ Other
✓ No Violations Detected on this Shipment

20. TERMS AND CONDITION

A: HAZARDOUS MATERIALS: Generator represents & warrants that Waste Material ___ is (or) X is not a hazardous waste as defined in 40 CFR 261. Where the material is a hazardous waste, this shipment is also accompanied by a separate and complete hazardous waste manifest, along with the appropriate land-disposal restriction notice and/or certification as required by 40 CFR 268.1

B: TITLE: Upon acceptance at the disposal site by Envirocare of Utah, Inc., and all appropriate regulatory authorities, title to the Waste Material which conforms to Generator's representation herein shall thereupon transfer from the Generator and be vested in Envirocare of Utah, Inc.

C: WASTE MATERIAL: Generator represents and warrants that all data set forth in this (UNIFORM LOW-LEVEL RADIOACTIVE WASTE MANIFEST) are true and correct in all respects and in accordance with all applicable governmental laws, rules, regulations and Envirocare of Utah, Inc.'s facility licenses.

D: INDEMNIFICATION: Generator agrees to indemnify Envirocare of Utah, Inc., its officers, its employees and agents against all losses and liability whatsoever if such losses or liability results from the failure of the Waste Material to conform in all material respects to the data supplied on the (UNIFORM LOW-LEVEL RADIOACTIVE WASTE MANIFEST) or if this shipment fails to meet the standards presented by the Department of Transportation or any governmental agency having jurisdiction over such matters.

FORM 540 (7-98)

UNIFORM LOW-LEVEL RADIOACTIVE WASTE MANIFEST

SHIPPING PAPER

(3-98)	
1. EMERGENCY TELEPHONE NUMBER (Include Area Code)	In Case of Emergency Call CHEMTREC 1-800-424-9300
ORGANIZATION	Kerr-McGee Chemical LLC
2. IS THIS AN "EXCLUSIVE USE" SHIPMENT	[X] YES [ ] NO
3. TOTAL NUMBER OF PACKAGES IDENTIFIED ON THIS MANIFEST	1
4. DOES EPA REGULATED WASTE REQUIRING A MANIFEST ACCOMPANY THIS SHIPMENT? If "Yes," provide Manifest Number	[ ] YES [X] NO
EPA MANIFEST NUMBER	N.A.

5. SHIPPER - NAME AND FACILITY	Kerr-McGee Chemical LLC P.O. Box 548 800 Weyrauch Street West Chicago, IL 60185
UTAH PERMIT NUMBER: 0110 000 013	SHIPMENT NUMBER 0457
CONTACT	Mark Knippel
6. CARRIER - Name and Address	Union Pacific Railroad 1418 Dodge Street Omaha, NE. 68179
CONTACT	Dale Bray
SIGNATURE - Authorized carrier acknowledging waste receipt	

SHIPPER I.D. NUMBER	0658
COLLECTOR	
PROCESSOR	
GENERATOR TYPE	X Industrial
TELEPHONE NUMBER (Include Area Code)	630-293-6330
EPA I.D. NUMBER	N.A.
SHIPPING DATE	5/20/2004
TELEPHONE NUMBER (Include Area Code)	888-877-7267
Date	5/20/2004

7. NRC FORM 540 AND 540A	PAGE 1 OF 1 PAGE(S)
NRC FORM 541 AND 541A	PAGE 1 OF 1 PAGE(S)
NRC FORM 542 AND 542A	Not Used
ADDITIONAL INFORMATION	Not Used
8. CONSIGNEE - Name and Facility Address	Envirocare of Utah, Inc. Clive Disposal Site Interstate 80, Exit 49 Clive, UT 84029
SIGNATURE - Authorized consignee acknowledging waste receipt	L72642
10. CERTIFICATION	This is to certify that the herein-named materials are properly classified, described, packaged, marked, and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation. This also certifies that the materials are classified, packaged, and labeled and are in proper condition for transportation and disposal as described in accordance with the requirements of 10 CFR Parts 20 and 61, or
AUTHORIZED SIGNATURE	Steve Hawke (signature on Shippers file copy)
TITLE	Site Manager
DATE	5/20/2004

8. MANIFEST NUMBER (Use this number on all continuation pages)	0659-02- 0457
CONTACT	Shipping and Receiving
TELEPHONE NUMBER	(436) 884-0155
DATE	5/28/04

11. U.S. DEPARTMENT OF TRANSPORTATION DESCRIPTION (Including proper shipping name, hazard class, UN/ID number, and any additional information)	12 DOT LABEL "RADIOACTIVE"	13 TRANSPORT INDEX	14 PHYSICAL AND CHEMICAL FORM	15 INDIVIDUAL RADIONUCLIDES	16 TOTAL PACKAGE ACTIVITY MBq	16 TOTAL PACKAGE ACTIVITY nCi	17 LSA/SCO CLASS	18. TOTAL WEIGHT OR VOLUME (Use appropriate units)	19. IDENTIFICATION NUMBER OF PACKAGE
Ore tailings and soils and debris containing	NA	NA	Solid / Thorium Oxide	Th-232, Ra-226, Th-230, U-nat	7.27E+01	1.96E+00	NA	20.5 tons	BKRU012690
small amounts of radioactive material with								405 cubic feet	
low radiological hazards.									
Fuel Contract DER-UP-C-21537									
STCC Code 4929133 Prepaid									
DO NOT HUMP									
ROUTE: MM-Blue Island, IAIS-Grand Junction, UP - Clive									

FOR CONSIGNEE USE ONLY

- ___ Record Waste Description Inadequate
- ___ Contamination or Leakage Detected
- ___ Unexpected Exposure Rates Detected
- ___ Labels, Markings, etc. Inadequate
- ___ Container Integrity Inadequate
- ___ Other
- ✓ No Violations Detected on this Shipment

20. TERMS AND CONDITION

A. HAZARDOUS MATERIALS: Generator represents & warrants that Waste Material ___ is (or) X is not a hazardous waste as defined in 40 CFR 261. Where the material is a hazardous waste, this shipment is also accompanied by a separate and complete hazardous waste manifest, along with the appropriate land-disposal restriction notice and/or certification as required by 40 CFR 268.1

B: TITLE: Upon acceptance at the disposal site by Envirocare of Utah, Inc., and all appropriate regulatory authorities, title to the Waste Material which conforms to Generator's representation herein shall thereupon transfer from the Generator and be vested in Envirocare of Utah, Inc.

C: WASTE MATERIAL: Generator represents and warrants that all data set forth in this (UNIFORM LOW-LEVEL RADIOACTIVE WASTE MANIFEST) are true and correct in all respects and in accordance with all applicable governmental laws, rules, regulations and Envirocare of Utah, Inc.'s facility license.

D: INDEMNIFICATION: Generator agrees to indemnify Envirocare of Utah, Inc., its officers, its employees and agents against all losses and liability whatsoever if such losses or liability results from the failure of the Waste Material to conform in all material respects to the data supplied on the (UNIFORM LOW-LEVEL RADIOACTIVE WASTE MANIFEST) or if this shipment fails to meet the standards prescribed by the Department of Transportation or any governmental agency having jurisdiction over such matters.

FORM 540 (3-98)

UNIFORM LOW-LEVEL RADIOACTIVE WASTE MANIFEST

SHIPPING PAPER

1. EMERGENCY TELEPHONE NUMBER (Include Area Code)
In Case of Emergency Call CHEMTREC 1-800-424-9300

ORGANIZATION
Kerr-McGee Chemical LLC

2. IS THIS AN "EXCLUSIVE USE" SHIPMENT? [X] YES [ ] NO

3. TOTAL NUMBER OF PACKAGES IDENTIFIED ON THIS MANIFEST: 1

4. DOES EPA REGULATED WASTE REQUIRING A MANIFEST ACCOMPANY THIS SHIPMENT? [ ] YES [X] NO
If "Yes," provide Manifest Number of

EPA MANIFEST NUMBER
N.A.

5. SHIPPER - NAME AND FACILITY
Kerr-McGee Chemical LLC
P.O. Box 548
900 Weyrauch Street
West Chicago, IL 60185

UTAH PERMIT NUMBER: 0110 000 013
SHIPMENT NUMBER: 0458

CONTACT: Mark Knippel

6. CARRIER - Name and Address
Union Pacific Railroad
1416 Dodge Street
Omaha, NE. 68179

CONTACT: Dale Bray

SIGNATURE - Authorized carrier acknowledging waste receipt

SHIPPER I.D. NUMBER: 0659

[ ] COLLECTOR
[ ] PROCESSOR
[X] GENERATOR TYPE: Industrial

TELEPHONE NUMBER (Include Area Code): 630-293-5330

EPA I.D. NUMBER: N A

SHIPPING DATE: 5/21/2004

TELEPHONE NUMBER (Include Area Code): 866-877-7267

Date: 5/21/2004

7. NRC FORM 540 AND 540A — PAGE 1 OF 1 PAGE(S)
NRC FORM 541 AND 541A — PAGE 1 OF 1 PAGE(S)
NRC FORM 542 AND 542A — Not Used
ADDITIONAL INFORMATION — Not Used

8. CONSIGNEE - Name and Facility Address
Envirocare of Utah, Inc.
Clive Disposal Site
Interstate 80, Exit 49
Clive, UT 84029
L72770

SIGNATURE - Authorized consignee acknowledging waste receipt

18. CERTIFICATION
This is to certify that the herein named materials are properly classified, described, packaged, marked, and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation. This also certifies that the materials are classified, packaged, and labeled and are in proper condition for transportation and disposal as described in accordance with the requirements of 10 CFR Parts 20 and 61, or

AUTHORIZED SIGNATURE: Steve Hawke (signature on Shippers file copy)
TITLE: Site Manager
DATE: 5/21/2004

8. MANIFEST NUMBER (Use this number on all continuation pages): 0659-02- 0458

CONTACT: Shipping and Receiving

TELEPHONE NUMBER: (435) 884-0155

DATE: 6-2-04

11. U.S. DEPARTMENT OF TRANSPORTATION DESCRIPTION (including proper shipping name, hazard class, UN ID number, and any additional information)	12 DOT LABEL "RADIOACTIVE"	13 TRANSPORT INDEX	14 PHYSICAL AND CHEMICAL FORM	15 INDIVIDUAL RADIONUCLIDES	16 TOTAL PACKAGE ACTIVITY MBq	16 TOTAL PACKAGE ACTIVITY mCi	17 LSA/SCO CLASS	18. TOTAL WEIGHT OR VOLUME (Use appropriate units)	19. IDENTIFICATION NUMBER OF PACKAGE
Ore tailings and soils and debris containing	NA	NA	Solid / Thorium Oxide	Th-232, Ra-226, Th-230, U-nat	6 05E+01	1 64E+00	NA	20 5 tons	BKRU025183
small amounts of radioactive material with								405 cubic feet	
low radiological hazards									
Fuel Contract DER-UP-C-21537									
STCC Code 4929133 Prepaid									
DO NOT HUMP									
ROUTE: MM-Blue Island, MAB-Grand Junction, UP - Clive									

FOR CONSIGNEE USE ONLY

___ Record Waste Description Inadequate
___ Contamination or Leakage Detected
___ Unexpected Exposure Rates Detected
___ Labels, Markings, etc Inadequate
___ Container Integrity Inadequate
___ Other
✓ No Violations Detected on this Shipment

20. TERMS AND CONDITION

A HAZARDOUS MATERIALS: Generator represents & warrants that Waste Material ___ is (or) _X_ is not a hazardous waste as defined in 40 CFR 261. Where the material is a hazardous waste, the shipment is also accompanied by a separate and complete hazardous waste manifest, along with the appropriate land-disposal restriction notice and/or certification as required by 40 CFR 268.1

B TITLE: Upon acceptance at the disposal site by Envirocare of Utah Inc., and all appropriate regulatory authorities title to the Waste Material which conforms to Generator's representation herein shall thereupon transfer from the Generator and be vested in Envirocare of Utah, Inc.

C WASTE MATERIAL: Generator represents and warrants that all data set forth in this (UNIFORM LOW-LEVEL RADIOACTIVE WASTE MANIFEST) are true and correct in all respects and in accordance with all applicable governmental laws, rules, resolutions and Envirocare of Utah, Inc.'s facility license.

D INDEMNIFICATION: Generator agrees to indemnify Envirocare of Utah, Inc., its officers, its employees and agents against all losses and liability whatsoever if such losses or liability results from the failure of the Waste Material to conform in all material respects to the data supplied on the (UNIFORM LOW-LEVEL RADIOACTIVE WASTE MANIFEST) or if the shipment fails to meet the standards presented by the Department of Transportation or any governmental agency having jurisdiction over such matters.

FORM 540 (3-98)

(3-98)

UNIFORM LOW-LEVEL RADIOACTIVE WASTE MANIFEST

SHIPPING PAPER

1. EMERGENCY TELEPHONE NUMBER (Include Area Code)
In Case of Emergency Call CHEMTREC 1-800-424-9300
ORGANIZATION
Kerr-McGee Chemical LLC

2. IS THIS AN "EXCLUSIVE USE" SHIPMENT? [X] YES [ ] NO

3. TOTAL NUMBER OF PACKAGES IDENTIFIED ON THIS MANIFEST: 1

4. DOES EPA REGULATED WASTE REQUIRING A MANIFEST ACCOMPANY THIS SHIPMENT? [ ] YES [X] NO
If "Yes," provide Manifest Number:

EPA MANIFEST NUMBER
N.A.

5. SHIPPER - NAME AND FACILITY
Kerr-McGee Chemical LLC
P.O. Box 548
866 Weymouth Street
West Chicago, IL 60185

UTAH PERMIT NUMBER: 0110 000 613
SHIPMENT NUMBER: 8456

CONTACT: Mark Knippel

6. CARRIER - Name and Address
Union Pacific Railroad
1416 Dodge Street
Omaha, NE. 68179

CONTACT: Dale Bray

SIGNATURE - Authorized carrier acknowledging waste receipt

SHIPPER I.D. NUMBER: 0659
[ ] COLLECTOR
[ ] PROCESSOR
[X] GENERATOR TYPE: Industrial

TELEPHONE NUMBER (Include Area Code): 630-293-6330
EPA I.D. NUMBER: N.A.
SHIPPING DATE: 5/21/2004

TELEPHONE NUMBER (Include Area Code): 866-577-7267
Date: 5/21/2004

7. NRC FORM 540 AND 540A: PAGE 1 OF 1 PAGE(S)
NRC FORM 541 AND 541A: PAGE 1 OF 1 PAGE(S)
NRC FORM 542 AND 542A: Not Used
ADDITIONAL INFORMATION: Not Used

8. CONSIGNEE - Name and Facility Address
Envirocare of Utah, Inc.
Clive Disposal Site
Interstate 80, Exit 49
Clive, UT 84029
C72686

SIGNATURE - Authorized consignee acknowledging waste receipt

9. MANIFEST NUMBER (Use this number on all continuation pages)
0659-02- 0458

CONTACT: Shipping and Receiving
TELEPHONE NUMBER: (435) 884-0155
DATE: 6/1/04

10. CERTIFICATION
This is to certify that the herein-named materials are properly classified, described, packaged, marked, and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation. This also certifies that the materials are classified, packaged, and labeled and are in proper condition for transportation and disposal as described in accordance with the requirements of 10 CFR Parts 20 and 61, or

AUTHORIZED SIGNATURE: Steve Hawks (signature on Shippers file copy)
TITLE: Site Manager
DATE: 5/21/2004

11. U.S. DEPARTMENT OF TRANSPORTATION DESCRIPTION (including proper shipping name, hazard class, UN ID number, and any additional information)	12 DOT LABEL "RADIOACTIVE"	13 TRANSPORT INDEX	14 PHYSICAL AND CHEMICAL FORM	15 INDIVIDUAL RADIONUCLIDES	16 TOTAL PACKAGE ACTIVITY MBq	16 TOTAL PACKAGE ACTIVITY mCi	17 LSA/SCO CLASS	18. TOTAL WEIGHT OR VOLUME (Use appropriate units)	19. IDENTIFICATION NUMBER OF PACKAGE
Ore tailings and soils and debris containing	NA	NA	Solid / Thorium Oxide	Th-232, Ra-226, Th-230, U-nat	7.27E+01	1.96E+00	NA	20.5 tons	BKRU026280
small amounts of radioactive material with								405 cubic feet	
low radiological hazards.									
Fluor Contract DER-UP-C-21537									
STCC Code 4928133 Prepaid									
DO NOT HUMP									
ROUTE: MM-Blue Island, IMR-Grand Junction, UP - Clive									

FOR CONSIGNEE USE ONLY

___ Record Waste Description Inadequate
___ Contamination or Leakage Detected
___ Unexpected Exposure Rates Detected
___ Labels, Markings, etc. Inadequate
___ Container Integrity Inadequate
___ Other
_X_ No Violations Detected on this Shipment

20. TERMS AND CONDITION

A HAZARDOUS MATERIALS. Generator represents & warrants that Waste Material ___ is (or) _X_ is not a hazardous waste as defined in 40 CFR 261. Where the material is a hazardous waste, this shipment is also accompanied by a separate and complete hazardous waste manifest, along with the appropriate land-disposal restriction notice and/or certification as required by 40 CFR 268.7.

B. TITLE: Upon acceptance at the disposal site by Envirocare of Utah, Inc., and all appropriate regulatory authorities, title to the Waste Material which conforms to Generator's representation herein shall thereupon transfer from the Generator and be vested in Envirocare of Utah, Inc.

C. WASTE MATERIAL: Generator represents and warrants that all data set forth in this (UNIFORM LOW-LEVEL RADIOACTIVE WASTE MANIFEST) are true and correct in all respects and in accordance with all applicable governmental laws, rules, regulations and Envirocare of Utah, Inc.'s facility license.

D. INDEMNIFICATION. Generator agrees to indemnify Envirocare of Utah, Inc., its officers, its employees and agents against all losses and liability whatsoever if such losses or liability results from the failure of the Waste Material to conform in all material respects to the data supplied on the (UNIFORM LOW-LEVEL RADIOACTIVE WASTE MANIFEST) or if this shipment fails to meet the standards presented by the Department of Transportation or any governmental agency having jurisdiction over such matters.

FORM 540 (3-98)

UNIFORM LOW-LEVEL RADIOACTIVE WASTE MANIFEST

(SHIPPING PAPER)

1. EMERGENCY TELEPHONE NUMBER (Include Area Code): In Case of Emergency Call CHEMTREC 1-800-424-9300

GENERATOR: [illegible] Chemical LLC

2. SHIPPER - NAME AND FACILITY: [illegible] Chemical LLC, P.O. Box [illegible], [illegible] Street, West Chicago, IL [illegible]

UTAH PERMIT NUMBER: 0110 [illegible] 013 | SHIPMENT NUMBER: [illegible]

CONTACT: [illegible]

SHIPPER I.D. NUMBER: [illegible]

COLLECTOR | PROCESSOR | GENERATOR TYPE: X Industrial

TELEPHONE NUMBER (Include Area Code): [illegible]

EPA I.D. NUMBER: N.A.

SHIPPING DATE: 5/24/04

7. NRC FORMS 540 AND 540A: PAGE 1 OF 1 PAGE(S)
NRC FORM 541 AND 541A: PAGE 1 OF 1 PAGE(S)
NRC FORM 542 AND 542A: Not Used
ADDITIONAL INFORMATION: Not Used

8. CONSIGNEE - Name and Facility Address: Envirocare of Utah, Inc., Clive Disposal Site, Interstate 80, Exit 49, Clive, UT [illegible]

SIGNATURE - Authorized consignee acknowledging waste receipt

8. MANIFEST NUMBER (Use this number on all continuation pages): [illegible]-02- 0480

CONTACT: Shipping and Receiving

TELEPHONE NUMBER: [illegible]

DATE

3. IS THIS AN "EXCLUSIVE USE" SHIPMENT? X YES / NO

4. TOTAL NUMBER OF PACKAGES IDENTIFIED ON THIS MANIFEST: 1

5. CARRIER - Name and Address: Union Pacific Railroad, 1416 Dodge Street, Omaha, NE [illegible]

CONTACT: Dale [illegible]

TELEPHONE NUMBER (Include Area Code): [illegible]-577-7287

SIGNATURE - Authorized carrier acknowledging waste receipt | Date: [illegible]

6. DOES EPA REGULATED WASTE REQUIRING A MANIFEST ACCOMPANY THIS SHIPMENT? YES / X NO. If "Yes," provide Manifest Number: N.A.

10. CERTIFICATION: This is to certify that the herein-named materials are properly classified, described, packaged, marked, and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation. This also certifies that the materials are classified, packaged, and labeled and are in proper condition for transportation and disposal as described in accordance with the requirements of 10 CFR Parts 20 and 61, or equivalent state regulations.

AUTHORIZED SIGNATURE: [signature] | TITLE: Site Manager | DATE: 5/24/04

11. U.S. DEPARTMENT OF TRANSPORTATION DESCRIPTION (including proper shipping name, hazard class, UN ID number, and any additional information)	12 DOT LABEL "RADIOACTIVE"	13 TRANSPORT INDEX	14 PHYSICAL AND CHEMICAL FORM	15 INDIVIDUAL RADIONUCLIDES	16 TOTAL PACKAGE ACTIVITY MBq	16 TOTAL PACKAGE ACTIVITY mCi	17 LLW/NRC CLASS	18. TOTAL WEIGHT OR VOLUME (Use appropriate units)	19. IDENTIFICATION NUMBER OF PACKAGE
Ore tailings and soils and debris containing	NA	NA	Solid / Thorium Oxide	Th-232, Ra-228, Th-230, U-nat	6.06E+01	1.64E+00	NA	20.5 tons	[illegible]U012[illegible]
small amounts of radioactive material with								405 cubic feet	
low radiological hazards.									
Rail Contract: DEN-UP-C-21[illegible]									
STCC Code 40.29[illegible] Prepaid									
[illegible]									
ROUTE: [illegible] Island, [illegible] Grand Junction, UP - Clive									

FOR CONSIGNEE USE ONLY

Record Waste Description Inadequate
Contamination or Leakage Detected
Unexpected Exposure Rates Detected
Labels, Markings, etc. Inadequate
____ Container Integrity Inadequate
____ Other
No Violations Detected on this Shipment

20. TERMS AND CONDITIONS

A: HAZARDOUS MATERIALS: Generator represents & warrants that Waste Material ___ is (or) X is not a hazardous waste as defined in 40 CFR 261. Where the material is a hazardous waste, this shipment is accompanied by a separate and complete hazardous waste manifest, along with the appropriate land disposal restriction notice and/or certification as required by 40 CFR 268.

B: TITLE: Upon acceptance at the disposal site by Envirocare of Utah, Inc., and all appropriate regulatory notification, title to the Waste Material which conforms to Generator's representations herein shall thereupon transfer from the Generator and be vested in Envirocare of Utah, Inc.

C: WASTE MATERIAL: Generator represents and warrants that all data set forth in this (UNIFORM LOW-LEVEL RADIOACTIVE WASTE MANIFEST) are true and correct in all respects and in accordance with all applicable governmental rules, regulations and Envirocare of Utah, Inc.'s facility license.

D: INDEMNIFICATION: Generator agrees to indemnify Envirocare of Utah, Inc., its officers, its employees and agents against all losses and liability whatsoever if such losses or liability results from the failure of the Waste Material to conform in all material respects to the data supplied on the (UNIFORM LOW-LEVEL RADIOACTIVE WASTE MANIFEST) or if this shipment fails to meet the standards prescribed by the Department of Transportation or any governmental agency having jurisdiction over such matters.

FORM [illegible]